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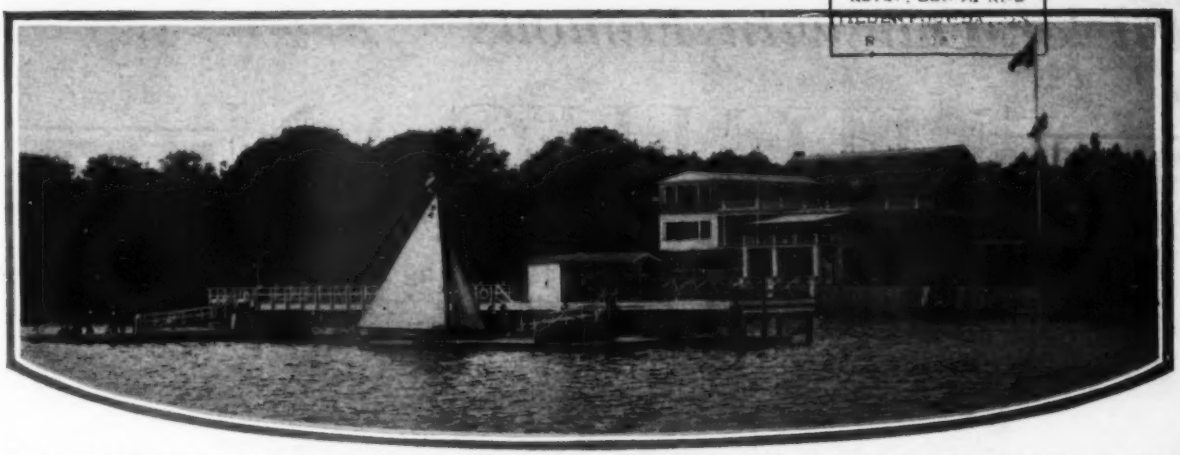

Home of the Bayside Yacht Club, Bayside, Long Island, one of the most active clubs on Long Island Sound. William H. Johns is Commodore of this club and much of its success is due to his efforts

THIS issue of MoToR BoatinG will reach our readers much earlier in the month than was the case with the October, November and December numbers. The promptness of getting this number to you is not altogether the result of a New Year's resolution, which will be forgotten in a month or two, but it is the beginning of a new policy which we have inaugurated to get out each issue of MoToR BoatinG so that readers in all parts of the country will receive their copies by the first of the month or earlier. We regret that it has been necessary to keep you waiting so long for the last few issues. From the complaints we have received from subscribers, about the lateness, we have been impressed by the number who look for the arrival of each issue of MoToR BoatinG on time and who are honestly disappointed when it does not come in the very mail in which they expect it. MoToR BoatinG up to and including the last September issue had always been printed in New York City. In September, our printer moved his plant from New York to a point about eighty miles away. As a result he was from a week to ten days slower than usual in getting out the last three issues, although we went to press on time. However, the situation has been rectified and beginning with this issue, MoToR BoatinG is again printed in New York and we are sure there will be no further delays in deliveries.

AS explained elsewhere in this issue, Commodore Gar Wood of Detroit is at the present moment out on the Pacific Coast with two of his fastest racing hydroplanes, Miss America, and Miss Detroit V. An invitation was extended to him by the California Yacht Club and Los Angeles Athletic Club, to meet the fastest racing craft on the Coast and he accepted the challenge. The Editor of MoToR BoatinG is a member of Commodore Wood's party and is acting as the Eastern representative on the Race Committee. He will also be a member of the crew of one of Commodore Wood's boats in several of the races. This will give him a chance to get all the first hand information of what is doing in racing on the Pacific Coast. The February issue of MoToR BoatinG will contain the story of all the Los Angeles events and much besides on winter motor boating in California. Southern California has made great strides in boating development and progress during the past year. They have, out there, every advantage to make motor boating the ideal sport. The Los Angeles motor boatmen deserve and are entitled to the support of the whole country for their efforts to make motor boat racing a major sport on the Pacific Coast. MoToR BoatinG is glad to be able to co-operate with them in making the present races the success which they are sure to be.

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119 WEST 40th STREET
NEW YORK, N. Y.

JANUARY *1923*

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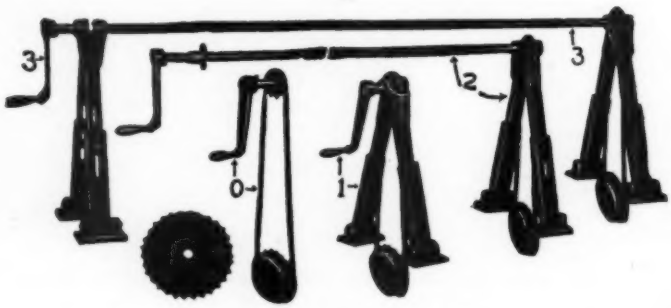

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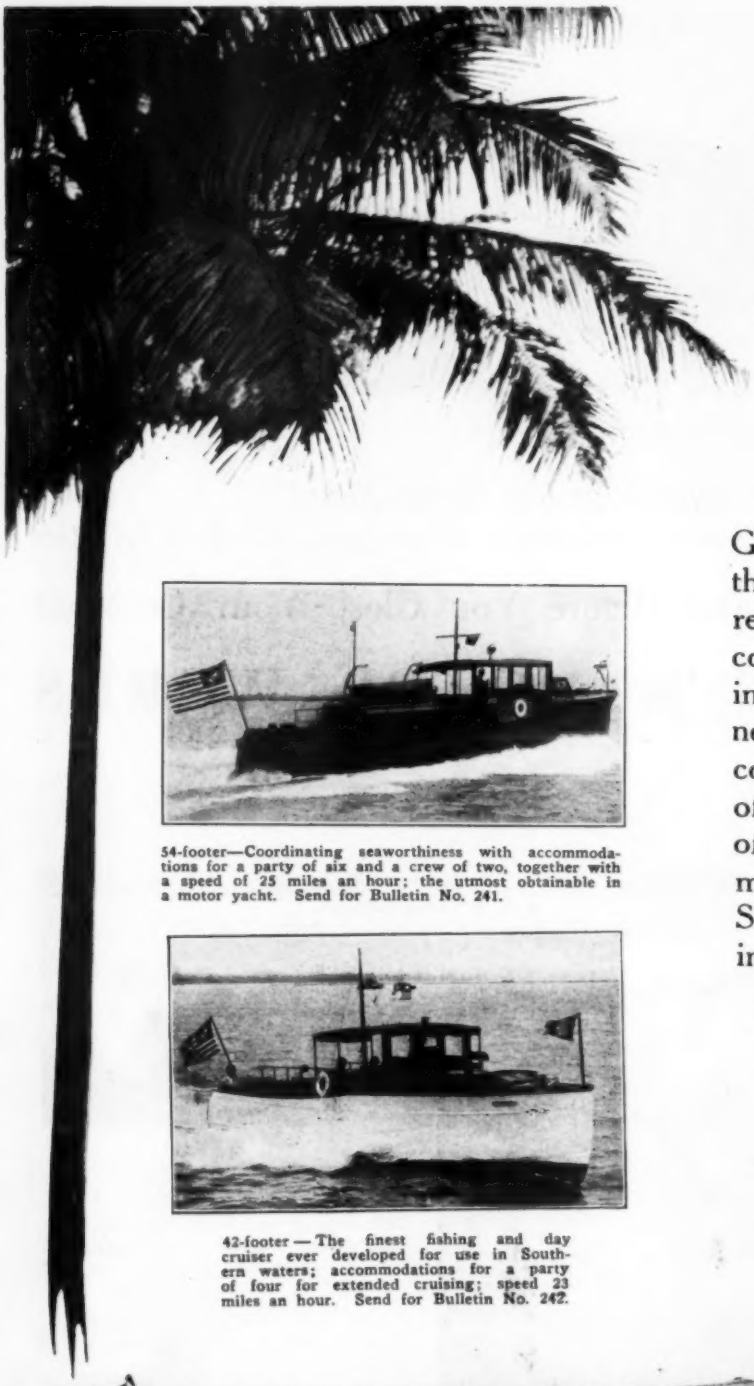

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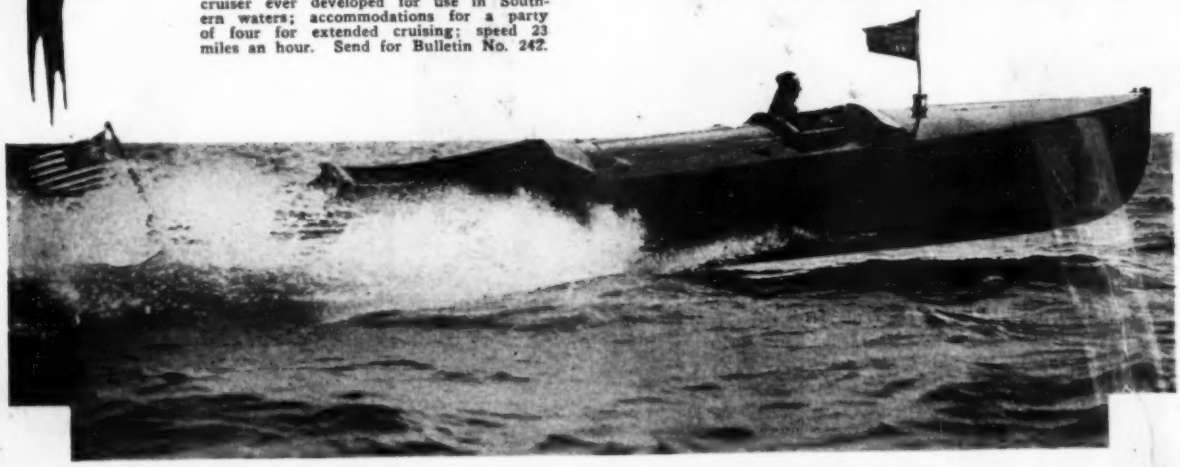

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Advertising Index will be found on page 114

The brick shell of the barracks (or it may have been the customhouse) is a reminder of the lost magnificence of Porto Bello

Where Pirates Roamed

Hippocampus, Winding Up Her Cruise in the Pacific, Passes Through the Canal to the Caribbean and Heads Eastward Along the Spanish Main—Porto Bello Then and Now

By Alfred F. Loomis

Photographs by S. C. Russell and the Author

BEFORE cranking up and getting under way with this installment of Hippocampus's cruise story, I should like to make it understood between myself and the readers of MoToR BoatinG that I dislike descriptive writing as much as they do. Of course, if my favorite author, Joseph Conrad, wants to devote a whole book to the description of a storm at sea, it is different. I read every word of it with eager interest and regret that the tempest didn't last longer. But in my general reading I avoid everything that tells me of conditions, facts, landscapes, and vital statistics.

If I happen to see a paragraph beginning, "On a bold shore whose overhanging trees swept down to the very water's edge," I read so far and no farther. Leaving the rest of the description to the author's imagination, I skip merrily down to the part where the heroine, half blinded by spray and foam, jumps off her water-logged catamaran and catches one of those overhanging trees with a death grip.

Action. That's what I—and, I presume, the readers of the present article—desire. And we don't get it here.

Hippocampus, it happens, has been cruising along a shore that is more interesting historically than any other part of Central America, and for a time at least her own actions are dwarfed by the events of two or three centuries ago. What does it matter that our little yawl was obliged to lie to in a veritable cloudburst off the ancient town of Porto Bello, when in the same waters and under the same leaden sky fabulously rich gold ships once found themselves under the hail of pirate's bullets? In the words of W. S. Gilbert, "It really doesn't matter." So with these few apologetic remarks we get under way.

Hippocampus in Culebra Cut, Panama Canal

When last heard from in print Hippo was lying secure off the village of Saboga in the Pearl Islands—as primitive a village as one is likely to see. Now in half a day's run she comes to the Pacific entrance of the Panama Canal, which, as everyone knows, is the pinnacle of modern achievement. Central America is filled with contrasts like this, and I often entertain the thought that here, if in any place, one could make a silk purse from a sow's ear. American enterprise has done greater wonders in imposing the canal on Panamanian civilization.

Before making our fourth and last passage of this isthmian marvel we took a day off for a run to the island of Taboga which lies ten miles from Panama City and is the all-year resort of wealthy Panamanians and impecunious canal employees. Here we discovered another contrast. Instead of the rank, enveloping overgrowth of the Pearl Islands, Taboga, less than thirty miles away, shows a clear, lofty skyline with grass lands reminding us pleasantly of home meadows. Taboga is as different from Saboga, which we had left a few

Ruins of Fort Triana, Porto Bello, with the American Yacht, U. S. Gold Star, in the harbor

days previously, as Ellis Island is from Coney. Moreover, the village sprawling on the northeastern side gives another jolt to one's expectations, for it is nothing more or less than a Mediterranean town transplanted bodily.

Instead of the thatched coverings of cocoanut leaves, Taboga boasts houses with tiled roofs, and instead of bamboo sides it displays walls painted in the lighter shades of blue, yellow, and green. The houses themselves give the impression of having started to move *en masse* to a prearranged location and to have settled down haphazardly wherever their underpinnings failed them. But for all the disorganization of their arrangement they bear an air of permanency which is purely European.

A modern improvement in Taboga is a concrete foot-way which reaches down from the American hotel Aspinwall and winds in and out through the village. It was down this walk that Jo and I went, looking for a speed boat which rumor says will cost a cool twenty thousand and develop thirty miles an hour. Lee Carr and Mrs. Carr, of Balboa, who were with us, showed even more curiosity than ourselves, for Carr is himself building a boat, and both of them know enough of native methods to wonder how twenty thousand dollars can be stowed away in one small hull.

Arrived at a crazy shed on the water front, we met the spick speed marvel beam on and solved the mystery. From bow to stern and within the cockpit as well she is covered with fancy little geegaws, knick-knacks, scrolls, and crosses, and in places of prominence she is further adorned with five-pointed stars inlaid with native colored woods. A pained and hasty glance into her bilge revealed planks butting on one inch ribs and daylight showing between deck and deck beams. Her outside finish was the work of a boy with an elliptical planing tool—but she certainly was a carefully

The sloop Cyclone, being built single handed by Lee Carr, of Balboa. Designed by William H. Hand Jr.

Part of Fort San Jeronimo, Porto Bello, the guns behind the battlements as they have lain for 250 years

ornamented speed boat. If I were a betting man I would wager heavily that she could knock the fancy stars out of any other boat in Panama.

It was a treat upon returning from Taboga to Balboa to inspect the sloop which Carr is building. She has been growing now for nine months, timber by timber, plank by plank, and in two months we have seen her change from an empty shell to a decked-over yacht. Carr works methodically—by day when he has time off from the Balboa shops, and by night six evenings a week—and, practically unaided, he is putting together one of the finest sloops that ever delighted the eye of man.

Cyclone, for she was christened before her concrete keel was poured, was designed by William Hand, and when he published her lines in MoToR BoatinG some two years ago he made the conjecture that no amateur builder would be able to put her together. Carr had never built a boat, but he wanted one and liked Cyclone's design; and despite her originator's opinion, he studied her lines and went to work. When, next summer, she sails into New York harbor, she will create something of a stir in boating circles, for not only is she built of excellent woods that are almost unknown outside the tropics, but she shows craftsmanship that a professional builder might well envy. The little Hippocampus, lying at anchor in Balboa harbor, dipped her forefoot in salute to a bigger, faster and better boat when her owner inspected the sloop Cyclone—but her owner still holds his preference for the yawl rig.

Of our final passage through the canal it need only be said that we established a record—that of being locked through at Miraflores and Pedro Miguel entirely by ourselves. Hitherto we have gone up as the appendage of an ocean liner, hugging the wall fearsomely and watching the bubbling water threaten us with destruction. This time, perhaps in deference to our feminine crew, we entered the thousand-foot chambers in solitary grandeur and, with no men on board to handle the lines, rose calmly as the control operator tempered the inflow to our diminutive proportions.

The tiled roofs and water front of Taboga

Operators of the immense electric mules which are used for towing ships through the locks leaned from their cab windows and asked us how we "got that way," or else offered to give us a tow. Serious-minded individuals pointed out that the electricity consumed in operating the lock gates cost more than our canal toll amounted to, and negro lock tenders laughed delightedly as some hidden humor of the situation appealed to them. And the dinghy, taking advantage of the novelty of the situation, backed up under the exhaust pipe and half-filled itself with hot water.

The village of Taboga, framed in the branches of a mango tree

When we came down to sea level again on the Atlantic side we learned that heavy weather had been prevailing in the Caribbean, and realized that luck had favored us in our choice of the Pacific for the first cruise. These high trouble-making winds of the Caribbean had dissipated across the isthmus in the fine dry-season weather that had made our Pearl Island trip delightful. Now, with characteristic hopefulness, we looked for a change in conditions—and got it.

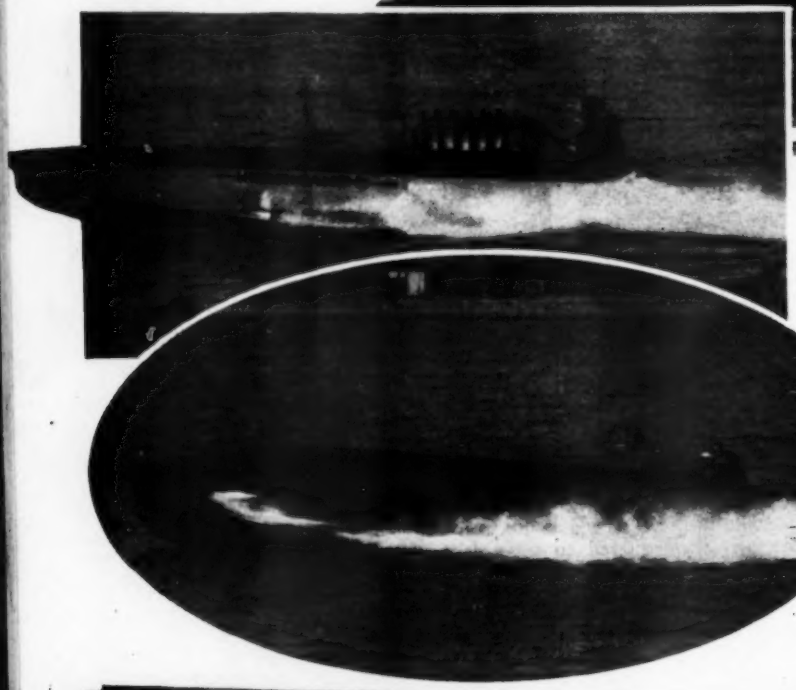
On the morning of our departure for the San Blas coast, which lies northeast and then east from Colon harbor, a fine slant of wind breezed up from the southwest and blew hourly stronger as the sun

(*Continued on page* 86)

Gar Wood's champion hydroplane, Miss America, which is racing on the Pacific against the fastest Western boats. This craft has a record of 76.655 m.p.h. and is the boat which won the British International Trophy in England by defeating the fastest motor boats of the world

(Below) Hurricane II, one of the Pacific Coast champions which will race against the Eastern boats. Hurricane II is owned by William Paden of Los Angeles, California

(In oval) Frank A. Garbutt's Mystery V, champion of the Pacific Coast, which is expected to make a close race with Miss America and Miss Detroit V. It is claimed that Mystery V has made in excess of 72 m.p.h. in trials. She is a stepless boat, designed by Hacker, 25 feet in length, and driven by one 12-cylinder Liberty motor



Gar Wood With Miss Detroit Races

The Fastest Craft of the East for the Championship

By Charles

COMMODORE GAR WOOD is seeking new fields to conquer. Having beaten everything capable of going faster than fifty miles an hour, both in this country and abroad, with the one exception of the Pacific Coast, he now steers his craft to the West and on December 29, 30, and 31 he

Lucky Strike, owned by Alvin Frank, one of the boats of the 825 cubic inch class

Miss America and on the Pacific

and West Meet at Los Angeles of the Country

F. Chapman

will meet at Los Angeles, California, the best which the Pacific Coast can produce. The Commodore knows that it's not going to be as easy to win out on the Coast as it has been at some regattas in the East so he has shipped two of his fastest craft, namely: Miss America, and Miss Detroit V, the two identi-

(*Continued on page* 102)

(Below) Miss Detroit V, as she will appear racing on the Pacific. This boat, together with Miss America forms the Eastern team which will compete against the Westerners

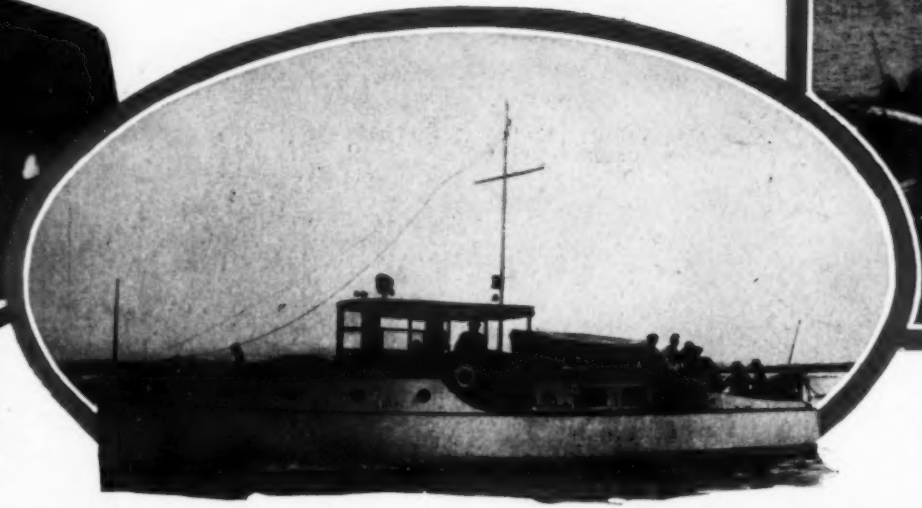
(Below) Jay Smith, who has been chief mechanician of all Gar Wood's boats since the Commodore started racing. He will be at the throttle of the champion, Miss America, in all her races on the Pacific Coast. Mr. Smith, who comes from a family of motor boat racing men, is without question, the foremost racing mechanician in the world

Commodore Gar Wood, the motor boat speed king of the world, and holder of practically every motor boating racing trophy in existence. The races at Los Angeles on December 20, 30 and 31 will mark Commodore Wood's first appearance in racing on the Pacific Coast. He expects to bring back East all of the Western trophies

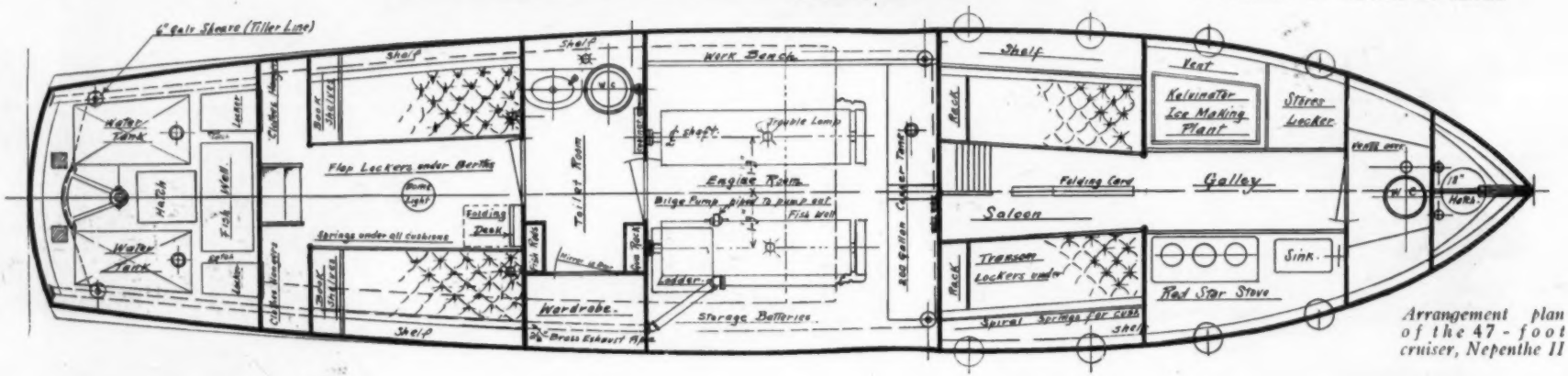
To Cruise on the Spanish Main

Twin Screw Cruiser Completed for Sportsman Who Will Explore the Atlantic Seaboard and the West Indies

Van Campen Heilner, a writer on outdoor subjects, has just completed his new 47-foot cruiser Nepenthe II. She has been designed for a cruising speed of over 14 miles and a maximum of 18. Her beam is 10-feet 2-inches and draft 3-feet

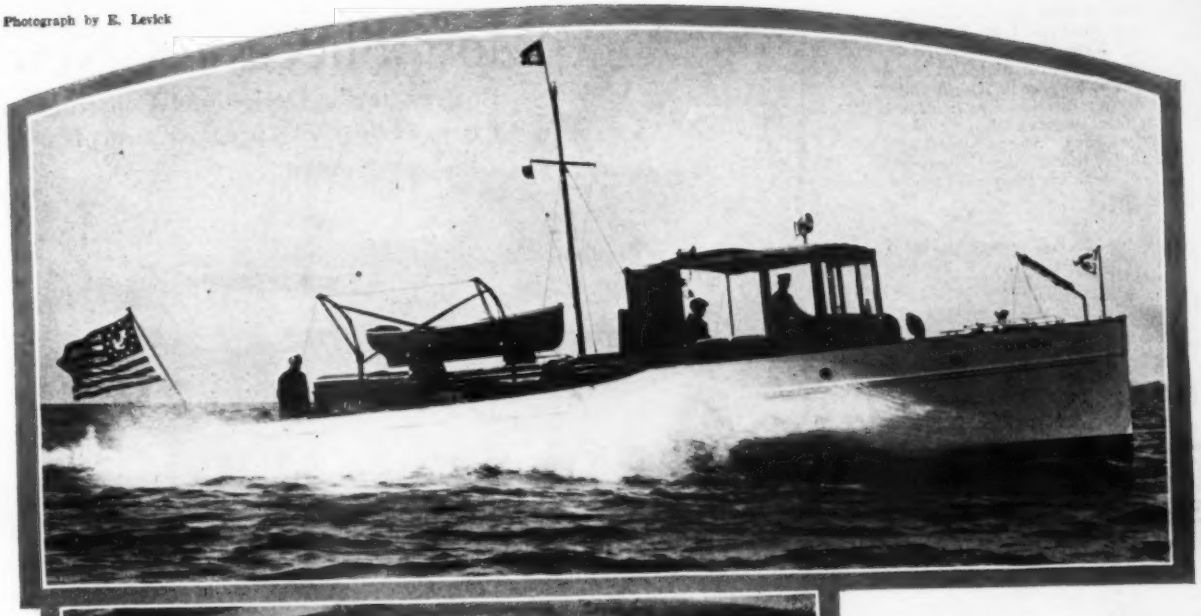


The boat is to be used for extensive exploration cruises along the Atlantic coast from Maine to the West Indies. She was designed by J. Murray Watts under Mr. Heilner's supervision and has been equipped with a pair of six cylinder model E6 Scripps marine engines. In addition a Delco lighting set and a Kelvinator ice machine are carried



Arrangement plan of the 47-foot cruiser, Nepenthe II

Photograph by E. Levick



Commuting by Cruiser

An Addition to the Fleet of Fast Long Island Sound Boats Which Daily Carry Their Owners to Business

ESSENTIALLY a commuter's cruiser, Orca, added to the fleet at Bay Shore, Long Island, promises to be one of the fastest vessels in the locality. Orca was designed and built for Malcolm B. Whitman of New York and is 50 feet long with a beam of 10 feet. She is of the round bottom type and has shown a speed of 26 miles an hour which checks closely with the theoretical speed of the propellers. She is fitted with Hyde wheels, 22 by 22 inches, which are turned at 1,600 revolutions for maximum results.

Ample space has been provided on the bridge deck for the accommodation of the owner and his guests without interfering with the control of the boat. The steering wheel and engine controls are on the port side, while the entrance to the forward cabin is in the center of the bridge deck.

Orca is driven by twin dual valve six-cylinder Sterling engines with a total rating of 450 h. p. Both engines are so installed that the controls lead to the bridge deck, enabling the boat to be handled by a combined captain-engine-

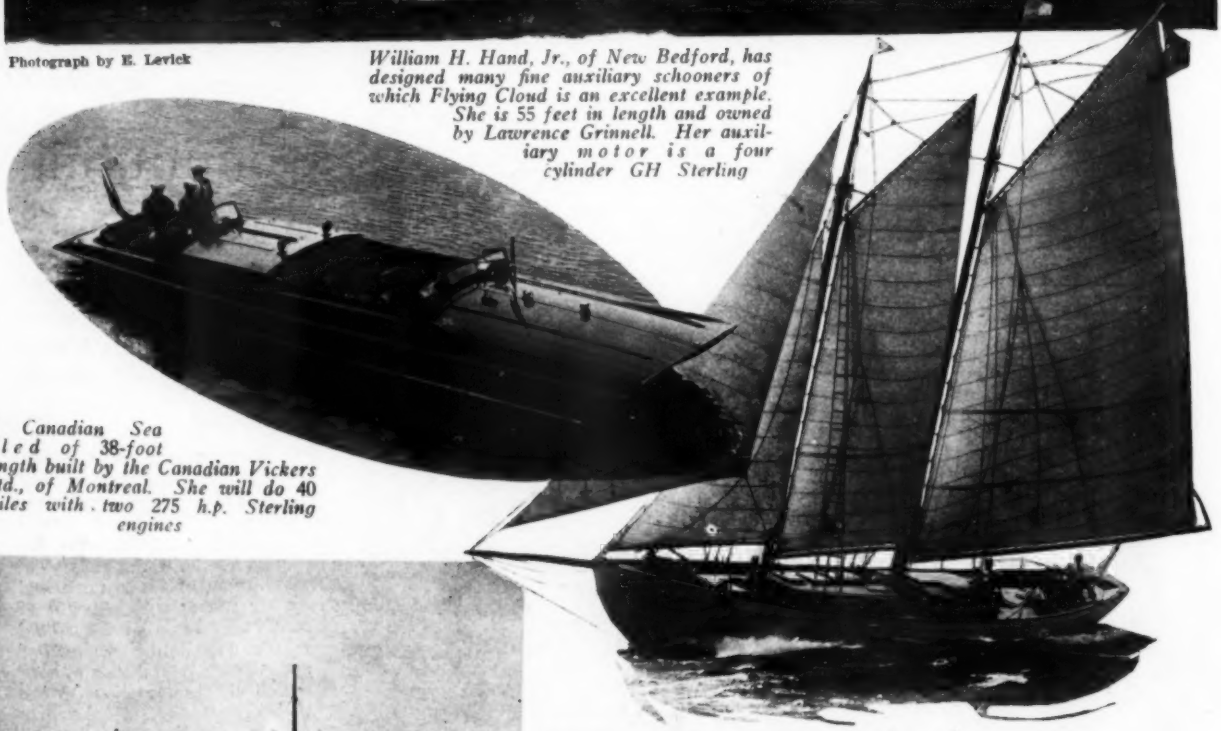
Most Successful New

Progress in the Design and Construction From These Typical Examples of

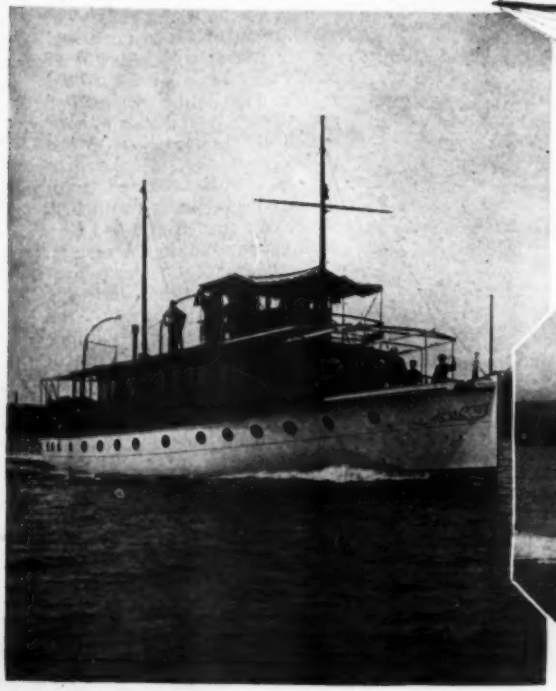
The Diesel yacht Caritas was built for J. P. Bartram of New York, from designs by Cox and Stevens. She is 98 feet in length and carries two 125 h.p. Winton Diesel engines of six cylinders each. She is typical of the present day roomier type cruising yacht

Photograph by E. Levick

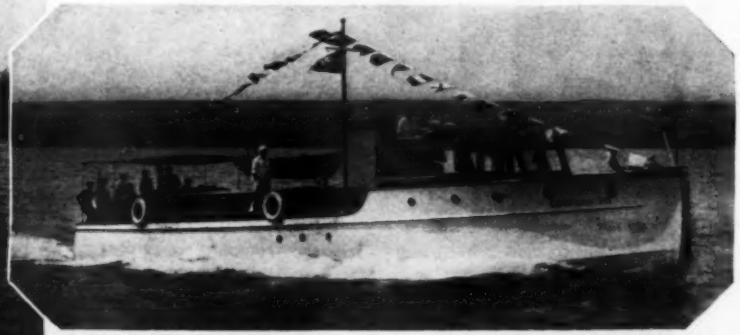
William H. Hand, Jr., of New Bedford, has designed many fine auxiliary schooners of which Flying Cloud is an excellent example. She is 55 feet in length and owned by Lawrence Grinnell. Her auxiliary motor is a four cylinder GH Sterling



A Canadian Sea Sled of 38-foot length built by the Canadian Vickers Ltd., of Montreal. She will do 40 miles with two 275 h.p. Sterling engines



Camalote is a 97-foot steel hull yacht, built for Carlos A. Tornquist of Buenos Aires at the Oertz-Werft, Hamburg. Her accommodations are well designed and commodious. She has two 100-h.p. engines

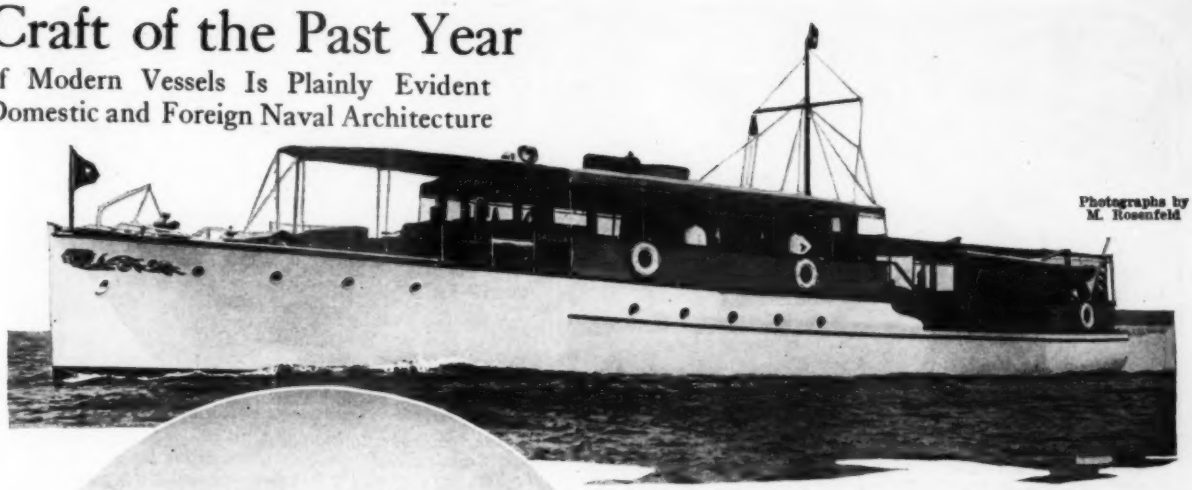


Leopard VII is a 65-foot twin screw express cruiser designed by John L. Hacker and built in Toronto under the supervision of her owner Griffith B. Clarke. She is equipped with two 275 h. p. Sterlings

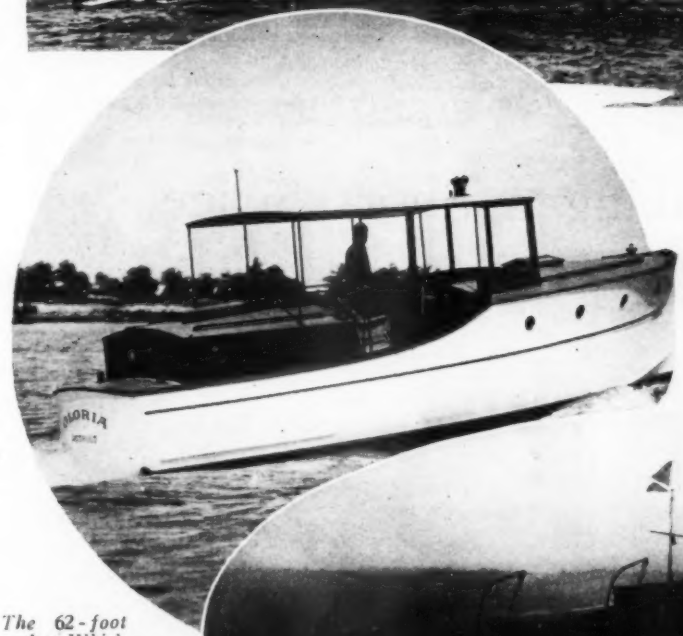
Craft of the Past Year

of Modern Vessels Is Plainly Evident Domestic and Foreign Naval Architecture

Photographs by M. Rosenfeld

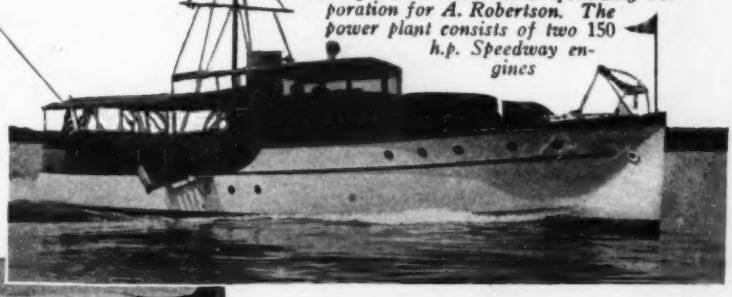


Sasqua illustrated above was built for De Ver H. Warner of Bridgeport, Conn., by the Luders Marine Construction Company. She is supplied with a pair of eight cylinder Winton gasoline engines and is 89 feet long

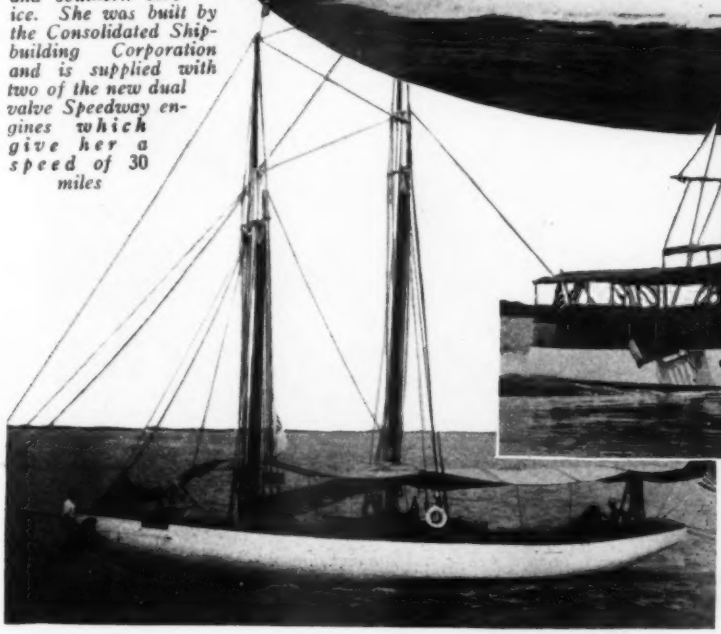


Gloria is one of the new 32-foot Harrison standardized cruisers. She is fitted with a 40-h.p. Kermath engine developing a speed of 12 m.p.h.

The 62-foot cruiser Whirlwind is a combination type intended for both northern and southern service. She was built by the Consolidated Shipbuilding Corporation and is supplied with two of the new dual valve Speedway engines which give her a speed of 30 miles



Margaret III, an interesting cruiser also built by the Consolidated Shipbuilding Corporation for A. Robertson. The power plant consists of two 150 h.p. Speedway engines



Commodore Sheldon Clarke, of the Chicago Yacht Club, does his yachting on his schooner Rainbow. She is equipped with auxiliary power and her power plant is in service a good part of the time

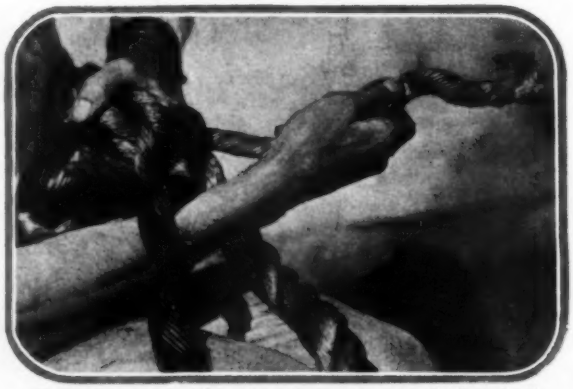
Begin operations by putting a temporary whipping on the ends of each of the six strands. Open out three or four lays on each end and marry the ends together, like interlacing your fingers

Push the two ropes tight to each other and bind the right hand strands along the rope. Open up the top strand of the standing part on the left and tuck under it the corresponding strand to its right

The Art of Making a Short Splice

One of the Most Useful Splices for All General Purposes—Serves to Neatly Unite a Parted Line or Combine Shorter Lengths—Particularly Adapted Where Lines are Not Required to Run Through Blocks

Give the rope a part turn over and tuck the next strand in the same way. Do not allow the strands to unlay or be too tightly twisted as you tuck them under



Turn the rope back again and complete the third tuck of the first series. Each strand should now be tucked under and so arranged that each passes under a different strand of the standing part

Haul all of the strands well home, giving them an over twist to keep them laid up. Pressure with the thumb helps to force a strand into place

Turn the rope end for end on your knee and cut the temporary binding after which we proceed with the other end of the splice

Every tuck will be from away towards you—Over one and under one. Note that the left hand thumb and forefinger hold the strand open while the right hand tucks

Haul tight on all of the untucked strands as shown at the left so that the two parts of the rope are brought closely together

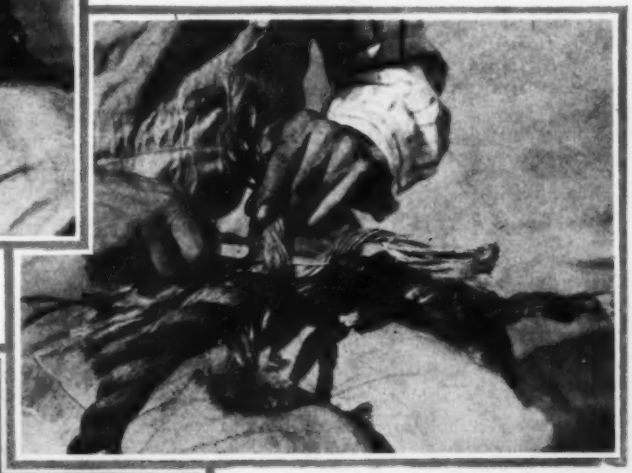
As shown below open up a strand on the part that is now to the left and tuck under as before

Haul all parts well tight and having done this with all three strands the rope should look like the illustration at the left

Now give the three strands of one end another tuck, over one and under one. A fid or marline spike may be necessary to open up the strands. Tuck the other end in the same way

If the splice is to be tapered, cut out half of each strand from underneath and tuck the remainder as before, do not cut too closely

Halve the remaining portion of each strand as before and tuck again. Do the same on both ends of the splice, and finally cut all loose ends



Stretch the rope well by fastening both ends and jumping on it. Roll the splice under your foot to make it round and neat

A close-up view of the California Yacht Club

Eleven Hundred Members in a Year

The Phenomenal Growth of the California Yacht Club of Los Angeles, Cal. The Scene of the First Inter-Sectional Championship Motor Boat Races

By John L. Von Blon

THE California Yacht Club of Los Angeles, largest organization of its kind on the Pacific Coast, now occupies a new $100,000 clubhouse than which it would be difficult to find one more attractive and complete. The strong and enterprising new club's ultra-modern plant occupies a convenient and commanding site on the East Basin at Wilmington, Los Angeles Inner Harbor, and although but recently completed has already become the daily rendezvous of many yachtsmen and their friends. A paved boulevard leads directly from the city to the main entrance of the grounds and building.

Probably not in the history of the sport has any club accomplished as much as the C. Y. C. in as short a period. Organized but nine months ago with the avowed purpose of making Southern California in general and Los Angeles particularly the yachting center of the world, it speedily developed into a formidable institution and today has 1,100 members and 300 boats in its fleet, with constant augmentation both of personnel and craft. Among its vessels are some of the finest and most valuable afloat, including E. L. Doheny's Casiana and many others. Mr. Doheny, by the way, is the club's first honorary commodore. Even before its incorporation and months prior to its absorption of the Los Angeles Yacht Club, the C. Y. C. had plans under way for the beautiful home in which it now happily is settled. There was business force as well as maritime spirit behind it. Nothing can thwart such a combination.

Anchorage of the California Yacht Club at Los Angeles. A year ago this club did not have one boat in its fleet; look at them now

The clubhouse is a commodious, charming structure, distinctive from every point of view. Its dark gables and gray clapboard walls scarcely give an indication of the building's nautical character when approached by land, the main entrance being shoreward; coming in from the sea, however, the gay flags and awnings on the promenade deck, the white gangways lowered to the immense concrete landing barge, the fine locker barge afloat beside it, and the tall light tower make a strikingly effective marine showing that is prevalent throughout. As one of the Los Angeles society writers expressed it, the landsman's first impulse on going aboard is to brace himself and advance cautiously beyond the lobby; the French windows of the salon, modeled after those of an ocean liner, look out upon the waters.

There are roomy upper and lower porches, with canvas and wicker furniture and broad-striped umbrellas, and these are technically referred to as "the decks."

The grounds are extensive, embracing nine acres, with several hundred yards of water frontage, and are splendidly landscaped and improved, lawns and trees already flourishing. There are numerous garages, parking space for hundreds of cars, and plenty of space for boat storage on a section of land overgrown with sea moss.

This young giant among clubs was incorporated only last February. Bernal H. Dyas is its president; Frank A. Garbutt, vice-president; Samuel C. Hall, secretary; A. J. Waters, treasurer, and A. P. Robinson, T. N. Farrand and E. B. Giffen the other directors. Commodore Otto G. Wildey commands the fleet.

(*Below*) *Speejacks, the 98-foot motor boat, returning from its trip around the world, and entering the port of Miami from which it started 16 months ago*

Down the winding Wynabucca, in a native Fiji craft

First Motor Boat Completes Trip Around the World

Speejacks Arrives at New York After Circumnavigating the Globe. A Consolidated Built-Winton Powered Ninety-eight Footer

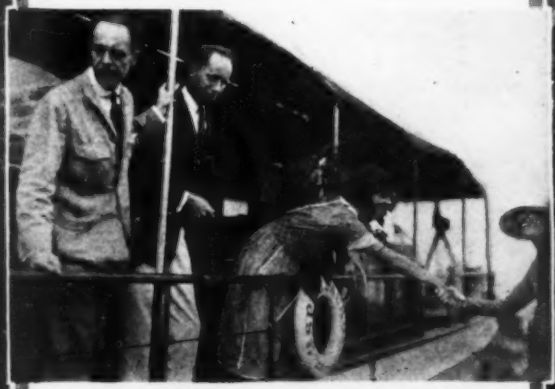
By Edna B. Victor

Photographs by Courtesy of Irwin L. House

WITH literally a world of knowledge stored away and ready to break loose, the prodigals have returned intact, weary but happy, interested and interesting, glad to feel the firm earth securely under them once more. Speejacks has brought back its courageous adventurers from distant lands.

We have heard of a Joan of Arc, a singular Catherine the Great; we have known suffragettes, defiant and loyal; women aviators, congresswomen, and the war's vintage of conductorettes, but this is the first time we have ever met a real flesh-and-blood round-the-world sailoress. We salute the fearless Mrs.

Mrs. A. Y. Gowen, the fearless lady-circumnavigator



A. Y. Gowen, E. J. Ingraham, and Mrs. Gowen, being greeted by Mrs. Carl G. Fisher on their arrival at Miami on Thanksgiving Day

Rato Eppeli, a Fiji Prince. Royal black and harmless

The natives of the Fiji Islands stage a fan-dance to relieve the monotony of a trip around the world

Gowen whose spirit truly matches that of the Viking of old!

Speejacks, a 98-foot motorboat of 64 net tons, left New York on August 31, 1921, going first to Norfolk and then to Miami from which port she set sail for other lands. The original party which set out from New York consisted of Mr. and Mrs. A. Y. Gowen, E. J. Ingraham, official photographer for the party, Jack Lewis, engineer, and William Soulby, steward. Mr. Gowen manned his ship with young college men who were anxious to see the world, but they dropped off along the way and the ship, sailing into the port of Miami, Florida, on Thanksgiving Day of this year, brought back with it what might be called a varied and international crew.

For sixteen months, almost to the day, Speejacks played Hide and Seek with Uncertainty in unknown and often uncharted waters; in strange lands, meeting with spine-tickling thrills and hair-raising escapes. It is perhaps a cause for marvel how far afield some of us go in search of that beauty which we leave behind us. We mistake unfamiliarity for beauty, but for other reasons than just to get a new thrill, Mr. and Mrs. Gowen set sail in their boat that was so carefully planned to meet any and all conditions of weather and sea. In Speejacks, everything was built by twos: two engines, two propellers, and two sets of lighting auxiliaries; two of everything. This feature stood the little ship in good stead on at least one occasion when she ran on an uncharted coral reef near the savage Solomon Islands and one of her propellers was put out of business. She was able to run on the other engine until she reached a dry dock.

The route taken by Speejacks was to Panama,

(*Continued on page 76*)

Mr. Gowen receiving the Order of the Whale's Tooth from the Chief of the Island of Bequa, Fiji

Commodore A. Y. Gowen, owner of the motor yacht, Speejacks

The only motor boat that has ever successfully attempted a trip around the world. It was gone sixteen months, and sailed in many uncharted waters and far out of the beaten paths

Who Wouldn't Like to Build a Boat—

If he could stand beneath the rustling fronds of the cocoanut palms and hear the blue waves of a tropical sea curling on the glistening beach? We should not care to carve a cayuca from a solid log as the Carib Indians do, but we could swing a hammer on the frames of a motor boat and come pretty close to forgetting the complications of the frozen North

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the March Prize Contests

1. Describe a table for use in cockpit of small cruiser or an open boat, made to fold or dissemble and stow in small space.
(Submitted by H. H. P., Oakland, Calif.)

2. Describe and illustrate with sketches steps necessary in overhauling the motor boat engine, to bring it back to proper condition.
(Submitted by H. A. H., Baltimore, Md.)

Rules for the Prize Contest

ANSWERS to the above questions for the March issue, addressed to the editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before January 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before January 25. The editor reserves the right to make such changes and suggestions in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

Convenience in Galley Arrangement

Practical Suggestions for Locating the Essential Fixtures in a Completely Equipped Galley for the Small Boat

Answers to the Following Question Published in the November Issue

"Describe the best arrangement for a galley. Illustrate any improvement or time saving devices that you have installed."

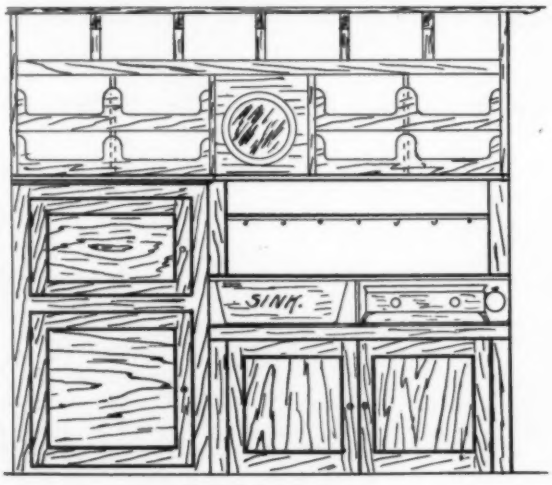
An Appropriate Galley Arrangement

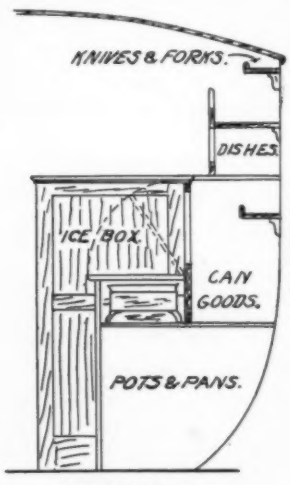
(The Prize-Winning Answer)

THE question as to the best arrangement for a galley is one that cannot be answered without reservations. An arrangement that would be just right on a sixty-footer would manifestly be out of the question on a thirty-footer. The majority of cruisers are about 30 feet long, so let us tackle the problem from that standpoint. The average thirty-footer has a raised cabin about 17 feet long. About 5 feet of this is forepeak and toilet and about 8 feet is given up to the berths and a couple of wardrobes, thus leaving a fore and aft length of 4 feet for the galley.

In the drawings you will see my ideal galley laid out on a boat 8 feet wide and having a galley space 4 feet long. In the first place note the stove, a real Shipmate range located athwartships so that the rolling of the boat does not throw the cook onto the hot stove. Beneath the range is a coal box which can be filled from on deck. Next comes a locker from the dresser to the roof for pots and pans. Beneath the dresser is lots of room for food storage. In the way of the galley the frames are not ceiled over, this gives a chance of fitting small racks between the frames and right out to the planking. Such racks are fine for glasses, small bottles and cans and the galley impedimenta in general. The sink is arranged in the usual fashion. The dresser top extends around against the main cabin bulkhead, forming a fine table for preparing the meal. Above this part of the dresser are more racks for plates, etc. The next feature of this arrangement is the big drawer for soiled linen beneath the athwartship dresser. This drawer is so large that it can be divided in two, one part for clean linen and the other for the dirty articles that normally are thrown about until ready to be wrapped up for the laundry. Note that there is just ample space between the stove and dresser to stand and still have something to rest against when she is rolling.

On the opposite side, next to the companion, is a big





For the small cruiser the arrangement suggested by W. B. M. is very practical and provides for all essentials

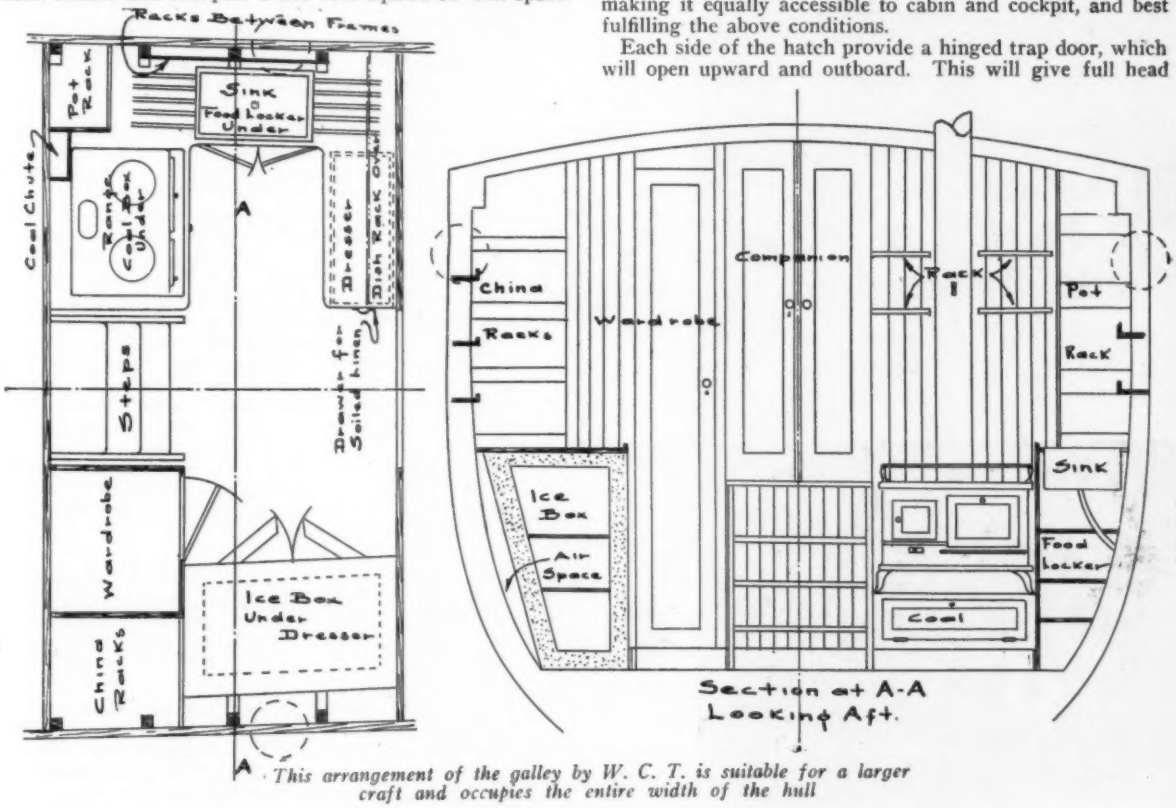
locker for oilskins and deck clothes. This is handy to the deck and for this reason is permissible in the galley. Outboard of the wardrobe is a large rack for dishes. A drawer for silver can be placed in it as well. The ice box is of ample size, installed under a dresser. The top can be used when preparing meals as a serving table. Note particularly that the ice box is built in so that there is an air space between it and the hull. This prevents the rot which always occurs when a box is built out to the planking. Above the ice box more racks can be placed as desired. Taken all in all this galley is close to the ideal.

W. C. T., New York, N. Y.

Galley Arrangement and Conveniences

ON the average small cruiser the logical location for the galley is in the after part of the cabin, on the side which interferes least with traffic on the companion steps. Here head room is the best and heat and odors of cooking readily pass out through the companionway, leaving the cabin cool and free from odors of cooking.

The arrangement shown has been designed for a raised deck cruiser and occupies a five-foot square of wall space.



This arrangement of the galley by W. C. T. is suitable for a larger craft and occupies the entire width of the hull

If less space is available the same arrangement may be used by omitting the space occupied by the ice box. In some boats the ice box may be built under the cockpit floor with doors to the food compartment opening in. Wherever you locate the ice box provide for filling the ice compartment from outside. This is a great convenience in the kitchenette and will be found equally as desirable in the galley.

The general arrangement is clearly shown in the drawing and needs no explanation, but a few notes on the construction might be valuable. Build the ice box first and then set up the shelf upon which the copper sink and the stove rest. The sink is permanently enclosed, but provide a door which opens down for the stove compartment. This is for easy access to the stove for cleaning and regulating. The stove compartment and the underside of the woodwork directly above the stove should be lined with copper or zinc as a precaution against fire. Both the stove and sink compartments have hinged covers which, when down, form a convenient work table. It is seldom that the stove and sink are both in use at the same time a table is desired. These hinged covers used as a table tend towards neatness as things must be put away before the covers can be raised.

Some one may object to having the stove enclosed, or its top on a level with the table. In this case the cover may be permanently fastened down and the stove placed on top. By dispensing with the dish compartment above the stove and fitting a drawer alongside the sink, equal space may be obtained.

All the compartments for dishes, can goods, and pots and pans have slatted bottoms for ventilation.

Finished in white enamel or varnished bright this arrangement makes a neat and attractive galley as well as a convenient, sanitary and well ventilated one.

W. B. M., Newburg, N. Y.

Accessibility in the Galley

WHEN planning a galley special consideration should be given to accessibility, storage of equipment, supplies, and to ventilation. Locating the galley directly forward of the bulkhead between the cockpit and cabin places it in the widest part of the boat, thus providing ample working space, making it equally accessible to cabin and cockpit, and best fulfilling the above conditions.

Each side of the hatch provide a hinged trap door, which will open upward and outboard. This will give full head room, good light, and will allow the heat and fumes to pass away from the stove, thus making the galley a more bearable place to work in, when preparing a meal. Provide catches on the under side of the doors, making it possible to lock the cabin safely and quickly when on shore leave.

Locate the stove on the starboard side and place beside it the locker, which on account of extending from the floor of the cabin to the deck will provide room for several shelves. Line the three sides and floor beneath the stove with asbestos covered with zinc, which while not quite so attractive as copper, is neat, equally serviceable and much cheaper. Beneath the stove is space for three fair sized drawers.

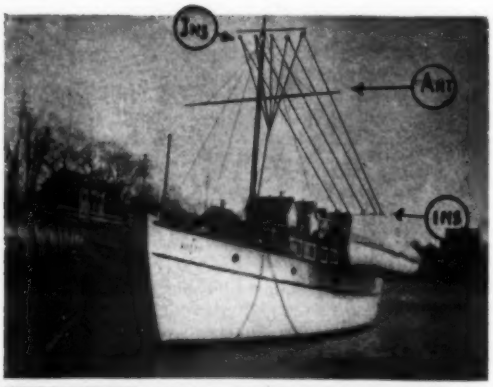
On the other or port side are located the sink, pump, table, dishrack, and ice box. Beneath the sink is locker space for the larger cooking utensils. The ice box is located in the coolest part of the boat, and is easily accessible.

J. K. S., Schenectady, N. Y.

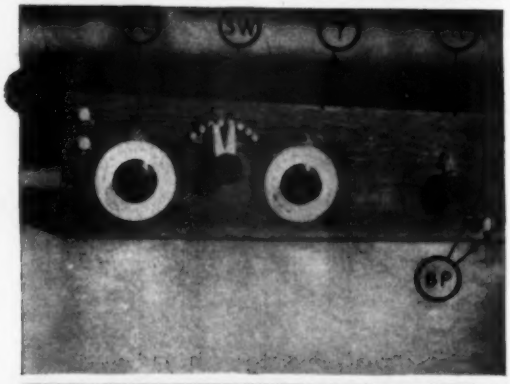
Complete Radio Receiver for the Small Cruiser

Illustrated Design for an Efficient Receiving Set Which Can Be Readily Constructed at Moderate Cost by Any Clever Boatman

By J. E. Ferris

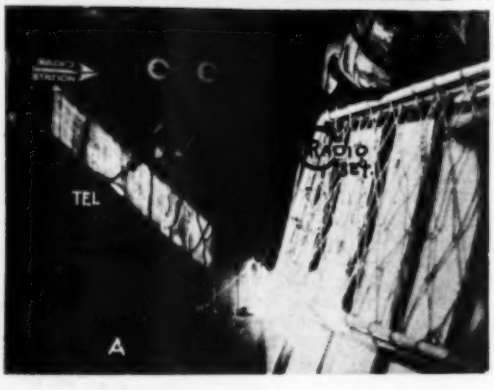


Arrangement of the antennae and lead-in wires as installed on the cruiser



Front view of the panel showing the mounting of the control knobs and switches

The set permanently mounted on the after bulkhead in the cruiser's cabin



The relation of the set to other fixtures in the cabin showing the relative space occupied

THE installation of a radio set on the average cruiser depends on several factors which are —cost of installation, simplicity of operation, and range to be covered. The set described below has been in service on a 34-foot cabin cruiser for over a year and has given satisfaction to all members of the family. Using an antennae 22 feet long consisting of five wires, a telephone broadcast daylight range of 50 miles was obtained which increased to 200 to 500 miles, depending on atmospheric conditions. The Arlington time signals are retransmitted by all of the major broadcast coast stations on a wave length of 360 or 400 meters at 12 noon and 10 P. M. The same stations broadcast weather reports during the day on a wave length of 485 meters and during the evening on their usual wave length. This set did not cost over $38.00 complete and has a range of from 200 meters to 600 meters, covering all broadcast and weather report requirements.

The equipment listed can be purchased from any radio dealer. If desired the variocoupler can be obtained with rotor and stator wound and tapped. If so, the construction of your set becomes one of assembly on a suitable panel.

A bakelite variocoupler, stator, and rotor, was obtained, as a wood or cardboard form would be warped by the moisture. The rotor was wound with a single layer of No. 22 D. C. C. wire. The two ends attached to the rods on which rotor turns. This coil is to be used as a ticker coil.

The variocoupler stator was then wound with the same size wire, allowing ½ inch from the end of tube. The winding was started and 30 turns put on. Then the wire was scraped and a lead tapped on consisting of 6 to 8 inches of No. 22 wire (soldered). The winding was then continued until another ten turns were in place. A tap was taken off again. This was repeated until 80 turns were on. As follows:

No. Turns	Taps
0	No. 1
30	No. 2
40	No. 3
50	No. 4
60	No. 5
70	No. 6
80	No. 7

The taps are to be connected to individual switch contacts when the variocoupler and associate equipment is mounted on panel.

The size of panel depends on the conditions existing in the cabin. It was decided to have a panel of pine ¼ by 16 by 6 inches high, fitting into a cabinet 6 inches in depth. A bakelite panel would improve the appearance of the installation at a slight increase in cost. The rheostat, variocoupler, socket, variable condenser, switch and contacts were laid on the panel, the location of the various holes for mounting noted and bored, countersinking same on panel front. These were mounted, using flat head 8/32 bolts throughout. Six binding posts were located and installed, after which the set is ready for wiring.

The wire used for connections was bare No. 14. This is a detail, however, as any size wire insulated or not will do as well. The connections are as shown in the enclosed sketch, which is a standard single circuit regenerative diagram. The following is the manner of wiring. Binding post aerial to stationary plates of variable condenser; from rotary plates variable condenser to No. 1 tap of stator of variocoupler to one terminal of grid condenser, from other terminal of grid condenser to socket connecting on binding post marked G (Grid). From bind-

The Prize-Winning Answer to the Following Question Published in the Prize Contest, November Issue

"Describe and completely illustrate a simple radio receiving outfit for an average cruiser. Outfit to be used for receiving weather and broadcasts."

ing post, ground to switch arm to rheostat. The taps Nos. 2, 3, 4, 5, 6, 7 are now connected to switch contacts, two of which will be spare without wires attached. Connect phone condenser across two phone binding posts, from one binding post to porcelain miniature socket. From socket to B battery terminal marked + (positive), from B battery terminal marked — (negative) to vacuum tube socket binding post marked F+, from socket binding post marked F+ to rheostat, from rheostat to binding post A battery. From binding post A battery to VT socket binding post marked F—. From telephone binding post to rotor tickler. From other terminal of rotor tickler to VT socket terminal marked P.

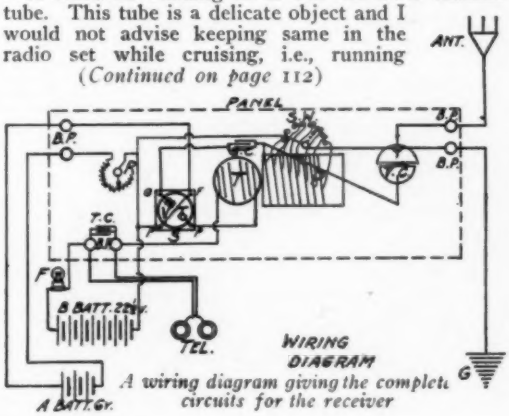
The set is now ready for a trial. Cabinet is screwed on wall, panel put in place, batteries connected, and the aerial and ground connections are next completed. A wire from ground binding post is extended to the engine where a connection is made to the engine bed, and also to the reverse gear frame. A direct electrical connection is obtained to the propeller shaft and propeller. This will be found to be sufficient ground connection when in salt water; when in fresh water, a wire is fastened to the anchor chain when at anchor, as fresh water is not as good an electrical conductor as salt water.

The aerial was placed between the mast and the rear flagpole—only 22 feet. The spreaders were 4 feet long to which five small insulators spaced equal distances were fastened. The five wires of seven strand No. 22 copper were brought together about 7 feet above deck, soldered, and a single wire extended through the deck to the set terminating on the aerial binding post.

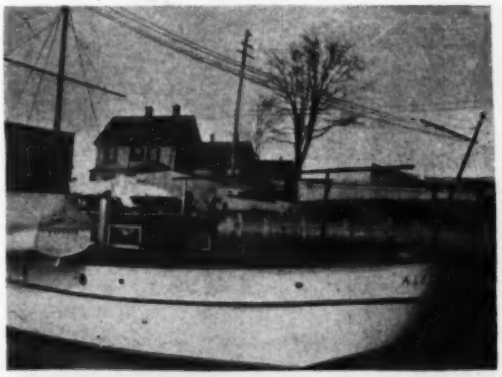
Place the vacuum tube in socket and then screw a miniature bulb in miniature socket, connect phone cords to binding posts and you are ready to try the set. Turn the rheostat clockwise until vacuum tube lights up quite white, rotate tickler coil until parallel with the primary stator, then rotate variable condenser through its entire 180°, moving the switch from time to time until radio telegraph or telephone signals are heard. Then adjust tickler coil position and variable condenser location until the loudest signals are heard. The radiophone stations are first noticed by their carrier wave, which when the set is oscillating appears as a whistle, which of course is an assistance when over twenty-five miles from a station.

A word of warning as to the use of a vacuum tube. This tube is a delicate object and I would not advise keeping same in the radio set while cruising, i.e., running

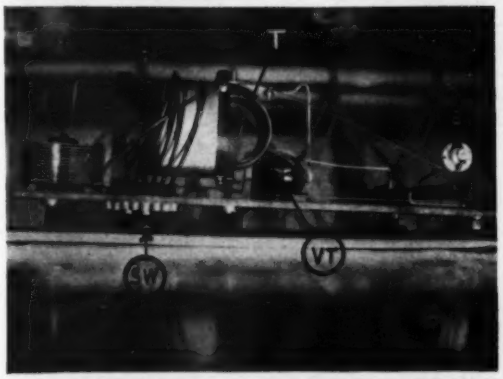
(*Continued on page 112*)



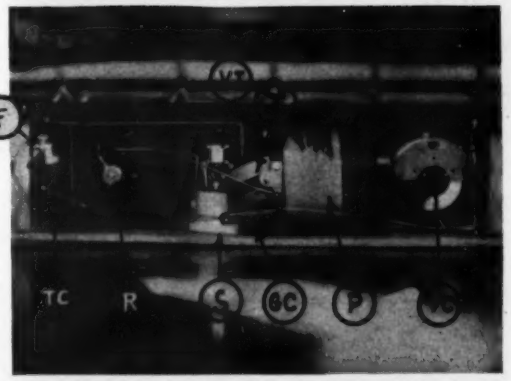
A wiring diagram giving the complete circuits for the receiver



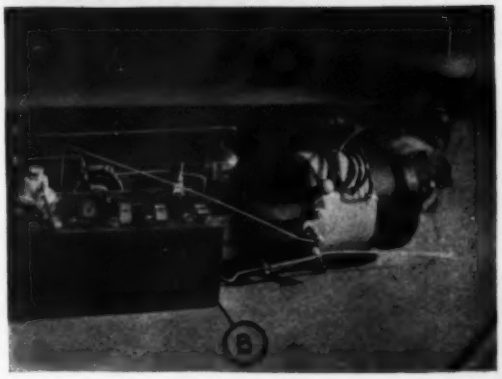
The antennae was led from the mast top to the after flag pole and consisted of five strands



Top view of the panel showing the arrangement of the component parts of the set



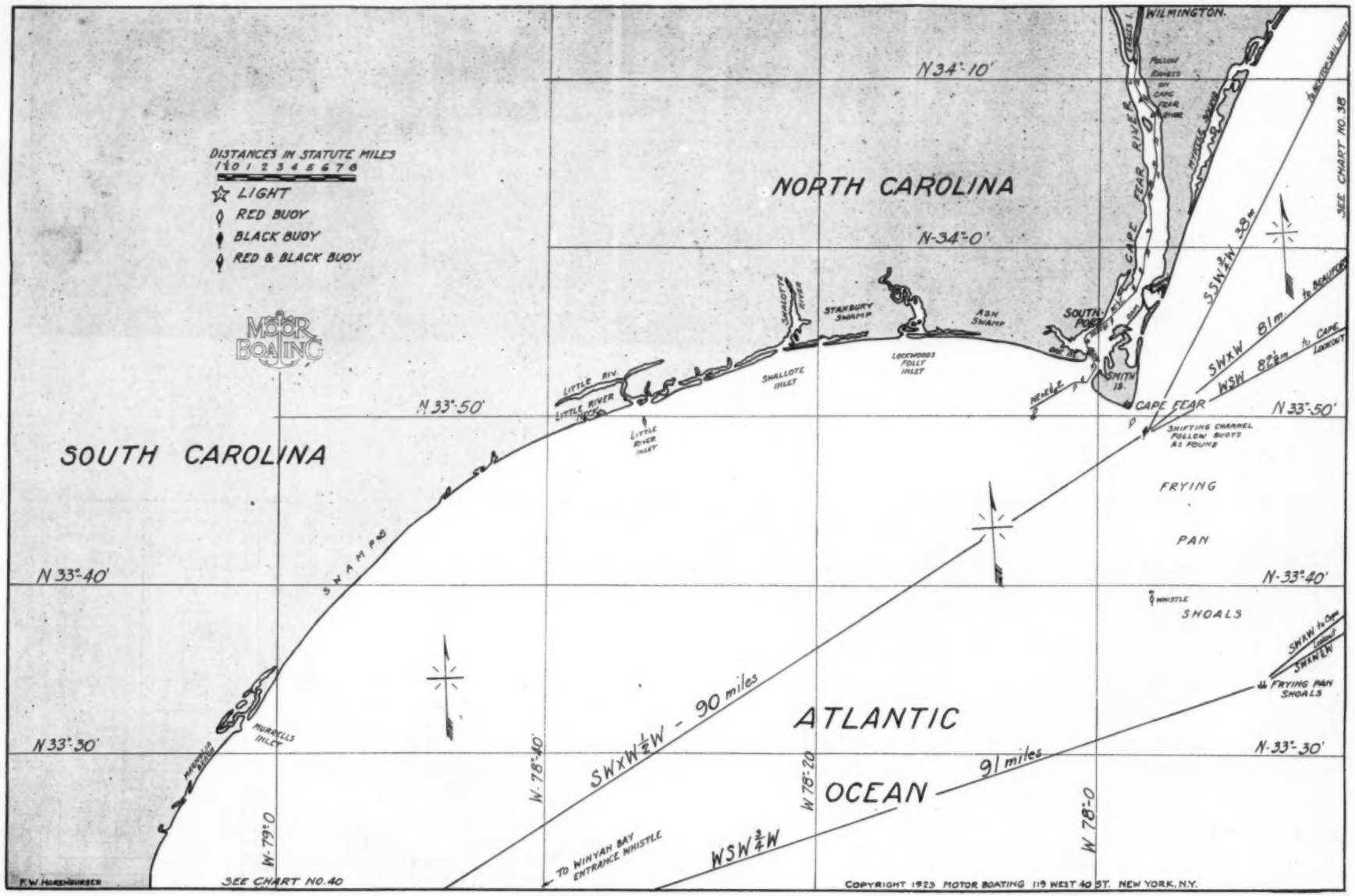
A rear view of the panel giving a clear indication of the relative positions of the parts



The B battery fits into the panel box and the miniature lamp which acts as a fuse is clearly shown

Motor Boatmen's Chart No. 39, Carolina Coast—From Cape Fear to Winyah Bay

For Use in Connection with Coast and Geodetic Survey Charts Nos. 150, 151, 152, 424 and 425



Working a Dead Reckoning Traverse

Remarks on the Uses of Dead Reckoning, and on the Compass Card, and Log Book—Working a Traverse—The Eleventh and Final Lesson of a Correspondence Course on the Subject of Dead Reckoning

By Dean Potter
Chairman, Committee on Instruction, United States Power Squadrons, Inc.

AS we approach the end of these lessons, it is almost with the feeling of age, looking back upon a misspent youth! Thumbing the pages of former chapters, we are mindful of the many things which have been inflicted upon the unsuspecting reader, of which, in all probability, he will never have occasion to make the slightest use! Would it have been better, we wonder, if we had stowed all the logarithms and trigonometric computation, stuck to the traverse table, and covered the job, by rule of thumb, in a couple of lessons? Certain it is, that whichever plan we might have chosen, hindsight would have preferred the other. But the die is cast, and there is no turning back. If we have sentenced motorboatdom to eleven months at hard labor, it is because of a conviction that the know why is scarcely less important than the know how. After all, if the reader has found our discursiveness tedious, it is his own fault, for he might have omitted whatever he found not worth reading!

At the very beginning, it was pretty clearly intimated that graphic and inspection methods are the ones commonly used at sea, and that a study of computation has its chief reward in a better understanding of theory. Let us now frankly declare that computation has but little place in the dead reckoning routine of the navigator. It is not used at sea, except in rare cases. Navigation is generally but a small part of a master's duties; especially so on small craft, where, at one and the same moment, he may be captain, engineer, deckhand, and cook! In practice, the navigator seeks results, rather than theoretical demonstrations, and to obtain them along the lines of least resistance. He does not compute a course to minutes, when the traverse table will hand it to him to the nearest degree. Nor does he bother with the traverse table, if he can obtain results from the chart in half the time.

In actual work, the chart holds a commanding position. Modern charts are dependable, and chart work is sufficiently accurate for most purposes. And a great advantage of graphic solutions, is that they are apt to reveal their own errors; a virtue not possessed by figures. In working on a chart, one visualizes the problem. He can scarcely apply in the wrong direction a course angle or change in position. And as he draws his course, or lays down his position on the chart, all the accompanying conditions, which he must consider, are before him. At a glance, he sees the aids or dangers to navigation, the depth of the water, the magnetic variation, and the proximity of the land. Thus the chart serves as the groundwork of navigation. We start with it. It shows the place where we are and where we wish to go. We may generally take our course and distance from it, and whenever we get a fix, by piloting, dead reckoning, or astronomical methods, its place upon the chart is at once plotted.

The dead reckoning traverse would generally be used to obtain the net result of a considerable run; especially so, if there had been numerous changes in the course. It would be easier and more dependable to work a traverse, than to attempt a complicated plotting to scale upon the chart.

Thus, the common use of dead reckoning is to sum up, from time to time, the results of the courses and distances made good. Sometimes it might be preferred to go to the tables, rather than to the chart, for a course and distance to be sailed. And perhaps rarely, especially if we were shy of charts, and the distances were great, we might wish to compute, rather than to interpolate for results beyond the ordinary limits of the tables.

But the great office of dead reckoning is to work up position, in terms of latitude and longitude, from courses and distances run. And this is best done by using a traverse form, the solution being by inspection.

Preliminarily to undertake a traverse, let us mention the log book and the compass card.

The log book is the continuing record of the voyage. In its simplest form, it would have columns arranged for the entry of such items as the date, time, compass course, patent log readings, direction and force of the wind, leeway, weather conditions, and remarks. The arrangement is illustrated in the problem hereafter given. There should be at least one page for each day's work. Some log books, especially those used on large steamers or navy vessels, are very elaborate, sometimes having several pages allotted to each day's work, with spaces for the recording of much detail of the vessel's routine, in addition to matters strictly relating to the navigation.

The first entries in the log book after the date, would ordinarily be the data relating to the taking of departure. These would be followed by a record of the time, compass course, patent log reading, wind conditions and so on. As the voyage progressed, any change in the compass course would be noted, with the time and patent log reading. Indeed the patent log would be read frequently, say each hour, and its results recorded. The log book entries should contain all the data necessary to enable the navigator to work up his position at any time.

The compass card, previously mentioned, is generally in two parts, one called the deviation card, and the other the steering card. The deviation card shows the deviation of the standard compass on every heading of the ship. If the vessel is headed a certain course by compass, the card tells the deviation error *on that heading.* The variation is obtained from the chart, and by applying the deviation and variation, the true course may be had, as explained in the last lesson. The steering card is the companion of the deviation card. Having found the true course, and applied the variation, we obtain the magnetic course. The steering card shows the deviation error to be then allowed in order to make good that magnetic course. In a well adjusted compass, there should not be much difference between the deviation and steering cards. But it will be seen that there may be a difference, and this we can best explain by an exaggerated illustration.

Suppose our deviation card gives:

CC 45°, Dev. 10° W,
CC 35°, Dev. 5° W,

Now suppose, with a CC of 45°, we wish to find the magnetic course. Plainly it would be 35°. But take the converse problem; suppose with a magnetic course of 35°, we wished to find the CC. If we consulted the *deviation* card, for course 35°, we would find a deviation of 5° W, which would make the CC 40°. But this would be wrong, for, as we have just seen, the CC which goes with a magnetic course of 35° should be 45°. Thus it is plain that the deviation which will convert a particular compass course to a magnetic course, may not be the same as the deviation which will convert a magnetic course of the same name to a compass course. Thus two cards are furnished by the adjuster: one, the deviation card, showing the error to be applied to compass courses to obtain magnetic courses; and the other, the steering card, showing the error to be applied to a magnetic course, to convert it into a compass course. Methods of working up the two cards are explained in treatises dealing with compass connection. The two cards may conveniently be made by use of the Napier diagram. Fig. 37 will serve as a sample compass card, and may be used in the problems hereafter given.

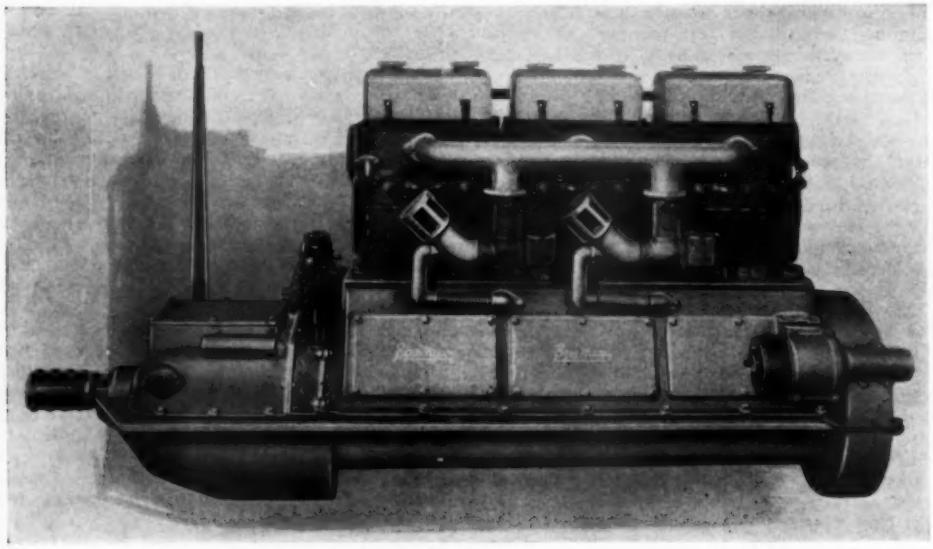
(*Continued on page 52*)

The Newest Speedway Engine

THE new model R Speedway engine which made its initial appearance at the last Motor Boat Show, and which caused much favorable comment among marine engineers, has been followed up by changes in the model M Speedway engine, also built by the Consolidated Shipbuilding Corporation at their Morris Heights plant.

This change involves the single overhead valves and the removable heads which are similar in type to those of the model R engine. It is designated by the builders as model MR. With a bore of 5¾-inches and a stroke of 7-inches, it will develop 185 h.p. at 1,300 revolutions.

In order to effect a proper balance between the weight of hull and the power of the engine in Consolidated built boats ranging from 60 to 65 feet, which is the most popular size, Consolidated engineers set to work to design a motor to fill this requirement. The lack of an engine to meet this particular service gave rise to this new model. The Consolidated Shipbuilding Corporation has produced another fine product, not only in itself but because it opens the way for the proper equipping of boats in cases where more power is required, and the proper balance of the boat maintained. Then again such boats which are now powered with their model M engines can be re-equipped with the new MR where more power is desired.



The new six cylinder model R Speedway engine just announced by the Consolidated Shipbuilding Corporation

For heavier and slower boats the model M Speedway engine will always have its place and will be continued in production. The MR engine has not been produced to supplant the model M, but to amplify the complete line of Speedway engines which now comprises eleven different models ranging in power from 22 to 300 h.p.

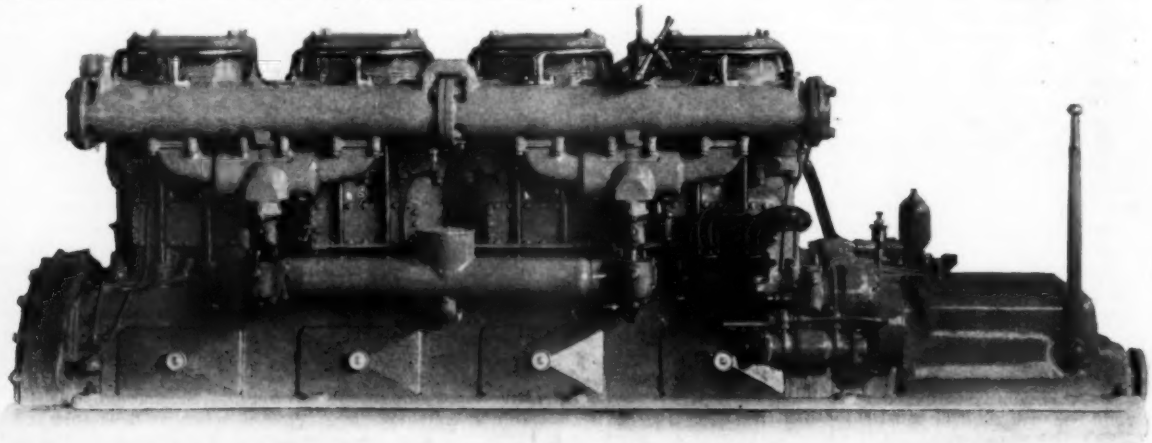
Speedway engines are all of the four and six cylinder types.

An Eight-In-Line Sterling

ONE of the principal reasons for building eight cylinder engines is that the bore can be reduced materially, which enables the engine speed to be increased and makes smoother running possible. The economy in fuel of this type machine, as well as the production possibilities, are among the reasons the Sterling Engine Company has undertaken the construction of this new eight-in-line machine.

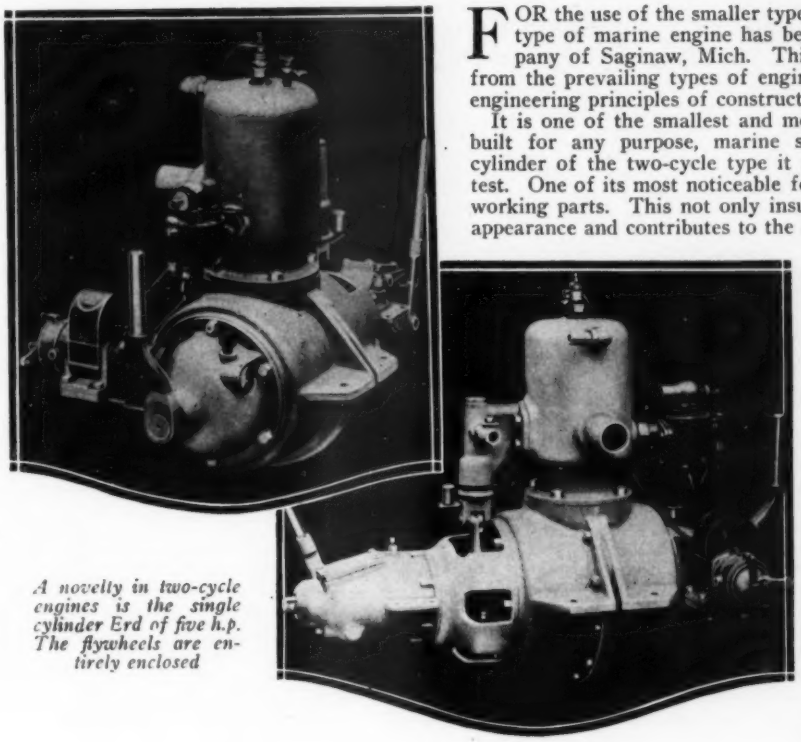
In past years eight-cylinder engines have not been looked upon with a special favor, but the new Sterling eight has been developed to a point where it is one of the most remarkable engines offered in the marine industry. Previous engines of this type on a bore of 5¾-inches developed 200 h.p. This eight cylinder dual valve Sterling develops 300 h.p. which in itself is some achievement. This additional power is developed at the same revolution rate as the earlier engines, viz. 1550 r.p.m.

One of these engines, under observation, has a service record of 800 hours of service without any attention. At that time a few nuts and bolts were tightened and the ignition looked over after which the engine resumed its service and is still on duty without a further record of its operation. Contrast this service with that of the average aeronautic engine, and it will be readily seen that this new Sterling eight has been brought to a point of high perfection.



The eight-in-line dual valve Sterling of 300 h.p. has been developed to a high degree of perfection

Original New Two-Cycle Erd Engine



A novelty in two-cycle engines is the single cylinder Erd of five h.p. The flywheels are entirely enclosed

FOR the use of the smaller types of boats an entirely new and original type of marine engine has been developed by the Erd Motor Company of Saginaw, Mich. This new machine is a radical departure from the prevailing types of engines and reflects in its design advanced engineering principles of construction.

It is one of the smallest and most compact engines of its power ever built for any purpose, marine service or otherwise. With a single cylinder of the two-cycle type it is rated at 5.6 h.p. on a dynamometer test. One of its most noticeable features is the complete enclosure of all working parts. This not only insures cleanliness but adds greatly to the appearance and contributes to the efficiency of the engine.

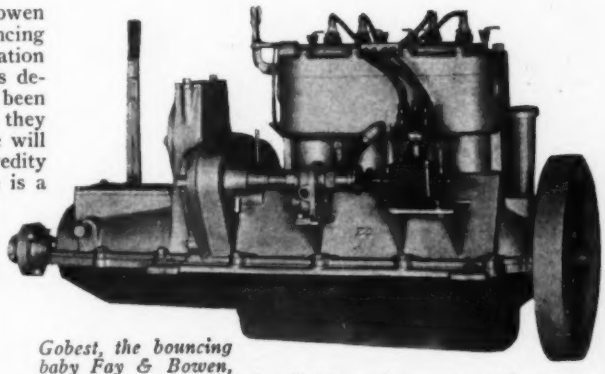
The flywheels are entirely enclosed within the crankcase and are so assembled with a crankpin and connecting rod between them as to make a very rigid assembly, and are mounted on ball bearings. The main crankshaft bearings are also fitted with large ball bearings as is the connecting rod. This dispenses entirely with the usual friction type of bearing. There is only sufficient space between the two flywheels to provide clearance for the connecting rod. After exhausted tests with this motor it was established that the ball bearings added considerably to the power output of the engine, since the power ordinarily absorbed by the bearings is added to the output of the engine.

Lubrication is effected by mixing oil with the fuel. This mixture is then drawn through the carbureter into the crankcase. Repeated tests have shown this method to be correct.

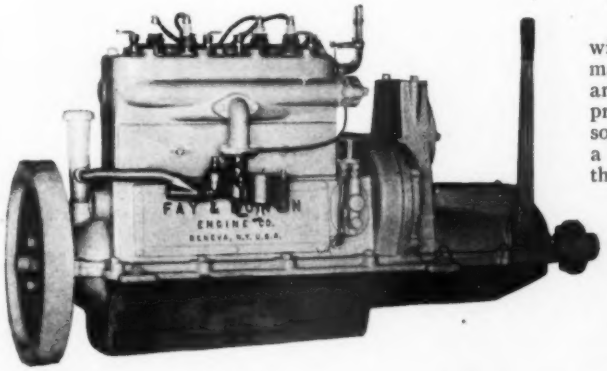
Fay & Bowen's New Baby

IT is with a great deal of pleasure that the Fay & Bowen Engine Company announce the safe arrival of a bouncing baby boy, weight 365 pounds. After mature consideration and with the able assistance of their whole family it was decided to name him Gobest. His photograph has already been taken and we know you will be as interested in him as they are. His parents are very proud of him and feel sure he will make his mark in the world. If there is anything in heredity he has inherited all the best traits of his forebears. He is a very comely kid and he certainly can kick. A doctor's technical report follows: Lungs, four, $2\frac{1}{8}$ by 4 inches; Heart action, four cycle; Pulsation, 600-1,400 r.p.m.; Energy, 5 h.p. 12 h.p. minimum, with a safe margin of surplus.

Some of the principal characteristics are: Cylinders are cast integral with the upper half of crankcase, and



Gobest, the bouncing baby Fay & Bowen, a new four-cylinder unit which promises great performances



with a removable cylinder head. The exhaust and intake manifold is cast integral with the cylinder block. Cylinders are of semi-steel of the same material and made by the same process as used in the larger Fay & Bowen engines. Accessories are of standard types, the clutch for example being a multiple type made by Snow & Petrelli. The ignition is the standard Atwater-Kent battery distributor system and gear driven. A magneto can be substituted if desired. The water pump is a standard gear type made by the Oberdorfer Brass Company.

The valve gear is driven by silent fabric gears and the camshaft is of high-grade steel with integral cams, accurately ground to masters. Valve lifters are of high carbon steel with Chrome-Vanadium face.

The crankcase extends the entire length of the engine and was designed to take all strains.

Anita, a Dandy Little Runabout

Complete Design and Specification for Building a Clever Little Boat Patterned After Marybelle, a Proven Success

Designed exclusively for MoToR BoatinG

By John L. Hacker

ONE of the most popular boats in the present series designed by John L. Hacker is the little 14-foot runabout Marybelle, published in January a year ago. In response to many requests the present runabout Anita has been prepared along the same general lines but of somewhat greater capacity. This little boat is almost three feet longer and of somewhat greater beam. The specified power plant is the same as was called for in the original Marybelle and is sufficient for all ordinary service. Naturally, there are many among us who are not satisfied unless they are tearing along at a high rate of speed and for their benefit we would say that it is also possible to install more power in this hull. The two cylinder Kermath motor of the same general type as the specified engine will do very nicely, while the light four-cylinder Universal, Red Wing, or other motors of similar capacity, will perform most excellently. By reason of the greater power and flexibility of the four-cylinder machine, they will make a very fine combination with this little hull and produce something which will be satisfactory in every way. As arranged in the design the gasoline supply is limited and intended for the small engines. Where a larger engine is installed, additional gasoline capacity should be provided by supplying an additional tank under the rear seat and from which the fuel is obtained by means of a vacuum tank. Naturally, the speed of the boat will be directly dependent upon the size of the engine installed and with the specified single cylinder machine the speed should be approximately eight miles per hour. With the more powerful four-cylinder motors mentioned, higher speeds will follow and fourteen to fifteen miles per hour can be secured without great difficulty.

This hull will produce a very able and seaworthy little boat which will perform equally as well, if not better, than its forerunner, the fourteen-footer. Several attempts were made to increase the length of the earlier boats but these cannot be said to have been successful. In some cases, where a boat of this size might be required for use as a tender to a larger yacht, lifting hooks for the boat davits could readily be supplied. The process of doing the actual work involved in completing a hull of this kind has been explained at great length many times previously. However, it is always desirable to have the information at hand when wanted, so that we will begin by saying that the first requisite is a suitable place to carry on the work. This should be a sheltered place with a level floor of sufficient size to accommodate the boat. Beginning is made by laying out in full size on paper each of the various frames and lines of the boat. The waterlines and body plans are located on the sheets of paper as called for on the line drawing. All lines should be faired with a batten before the drawings can be considered completed. On the body plan drawings, a parallel line to the outline should be drawn a distance of ⅜ inch in, on the sides, and 7/16 inch on the bottom. This is the allowance for the planking. The stations are marked out by placing the material under the paper and pricking through every few inches with an awl, which will give the exact shape desired. Tack another piece to this and both can then be sawn out at the same operation, making a right and left member.

In setting up, lay off a straight line on the floor and mark off the station points carefully as per dimensions given. Then set up a two by two inch post a few inches back of each frame, so that fastenings can be made later without interference. These posts should be high enough to allow work to be done underneath, and should be stayed so that they will be secure against falling over. A base line should then be established and the dimensions from this to the keel marked off. A batten should then be bent through these several points and when it is entirely fair, the posts should be cut off on this line. A small cleat will now be needed which should be long enough to reach to the rabbet of the keel. The keel is placed on the posts and securely fastened by means of these cleats. The stem and stern can now be plumbed and stayed into place. All of the frames may now be erected at the station points and the chines, clamps, and stringers let in and secured in proper position and in order. All unfair corners should then be trimmed off and the side planking applied between the sheer and chine lines. The engine stringers can now be placed and securely bolted after which the boat is turned over and the bottom planking completed. The hull is now ready for its initial coat of paint which is applied after it is entirely dressed and carefully sanded. Caulking of seams must be done beforehand and this is rolled in and not driven. When this is completed, the hull can be again turned and the inside coat applied after which the work of finishing can be undertaken and completed. After all the decking, trim, bulkheads, and seats are in place the final painting and varnishing can be applied and the hull completed.

Prospective builders of this boat who might desire further information on some of the steps necessary, can apply to the Editors or John L. Hacker who will be glad to set them right. A word of caution is necessary to avoid difficulties, and this is do not try to add any improvements to the design of this hull. The architect has carefully prepared these plans and they are correct in all details. A certain latitude in the installation of the engine has been allowed for, although excessively heavy machines will not prove satisfactory. It is advisable to limit the power to the motor specified or to some of the small four-cylinder machines mentioned.

GENERAL SPECIFICATIONS

General dimensions of this boat will be:

LENGTH OVERALL 16-feet 9-inches, beam 4-feet 11-inches, freeboard at the stem 2-feet 4-inches, freeboard at the stern 1-foot 6-inches, and draft 1-foot 3-inches.

KEEL: This is to be shaped from a piece of 1½ by 2¾-inch selected white oak or yellow pine. It is to be in a single length properly beveled and rabbeted to suit the planking. A shaft hole 1⅛ inches in diameter is to be bored to take a ⅞-inch shaft.

STEM AND KNEE: This should be shaped from a natural grown hackmatack knee. If this is not obtainable shape the stem and keel of 1¾-inch white oak as per plan. Fit the parts neatly and fasten together with 5/16-inch bolts. It is to be properly bevelled and rabbeted to suit the planking and fastened to the keel in a similar manner and the rabbeting completed.

STERN: The transom at the stern is to be of ¾-inch mahogany. It is to be reinforced with a ¾-inch cleat at the sides. A 1⅛-inch stern post up to the opening for the pillar should be fitted. This is to be fastened to the keel on each side. Then secure a ¾ by 2-inch cleat on each side extending to the upper cleat and fasten the lower cleat on each side of the keel and bevel properly. The transom is to be galvanized screw fastened and wood plugged.

FRAMES: These are to be sawn to shape from ¾-inch hackmatack knees and of such dimensions as are indicated and either bolted or riveted to an oak floor tie and then bolted to the keel with 1⅜-inch bolt as far as Station No. 5. From this point to the stern use two 5/16-inch bolts through to the rabbet at each frame. If hackmatack is not obtainable shape the side members of ⅝-inch white ash or oak and the bottom members of ¾-inch. Fasten the side to bottom members and then secure them to a floor tie in a similar manner to the forward stations. Beginning with Station No. 6 a continuous bottom piece may be used if desired. This should be of ⅞-inch stock. In making the frames complete fasten a 1 by 3-inch pine tie piece at the sheer line height and mark the center for alignment.

(Continued on page 106)

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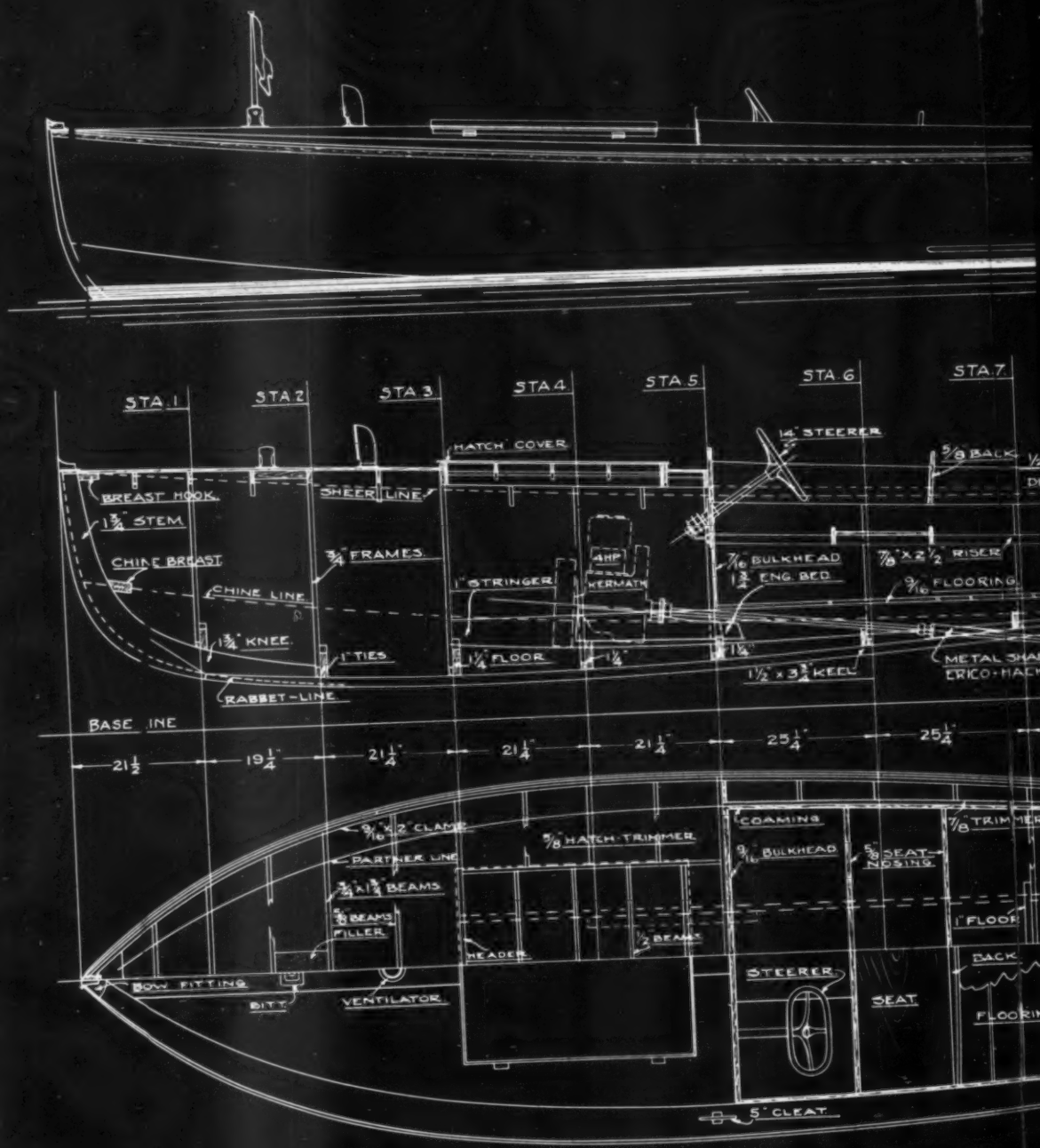
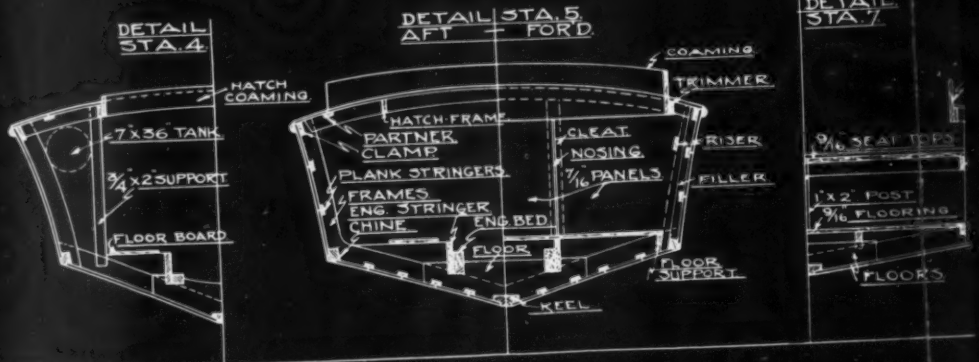
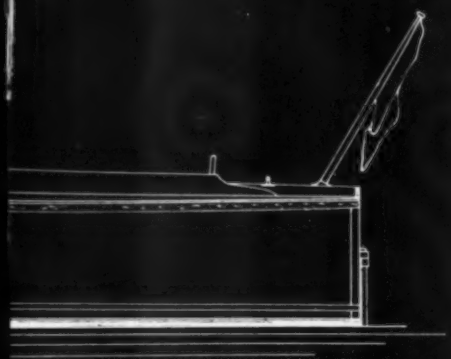

STA.1
STA.2
STA.3
STA.4
STA.5
STA.6
STA.7
HATCH COVER
14" STEERER
5/8 BACK
BREAST HOOK
SHEER LINE
1 3/4" STEM
3/4" FRAMES
CHINE BREAST
CHINE LINE
1 3/4" KNEE
1" TIES
1" STRINGER
4HP KERMATH
7/16 BULKHEAD
1 3/4" ENG. BED
7/8" X 2 1/2" RISER
9/16 FLOORING
1 1/4" FLOOR
1 1/4"
1 1/2" X 3 3/4" KEEL
METAL SHAF
ERICO-HACK
RABBET-LINE
BASE LINE
21 1/2
19 1/4"
21 1/4"
21 1/4"
21 1/4"
25 1/4"
25 1/4"
3/16" X 2" CLAMP
PARTNER LINE
3/4" X 1 3/4" BEAMS
5/8" BEAMS FILLER
5/8" HATCH TRIMMER
1/2" BEAMS
HEADER
COAMING
9/16 BULKHEAD
5/8" SEAT NOSING
7/8" TRIMMER
1" FLOOR
BACK
STEERER
SEAT
FLOORING
BOW FITTING
BITT
VENTILATOR
5" CLEAT


DETAIL STA. 4
HATCH COAMING
7" X 36" TANK
3/4" X 2" SUPPORT
FLOOR BOARD
DETAIL STA. 5 AFT — FORD
COAMING
TRIMMER
HATCH FRAME
PARTNER CLAMP
CLEAT
RISER
NOSING
PLANK STRINGERS
7/16 PANELS
FILLER
FRAMES
ENG. STRINGER
CHINE
ENG. BED
FLOOR
FLOOR SUPPORT
KEEL
DETAIL STA. 7
9/16 SEAT TOPS
1" X 2" POST
9/16 FLOORING
FLOORS

MOTOR BOATING'S
ANITA
Compl



Designed Especially for

MOTOR BOATING

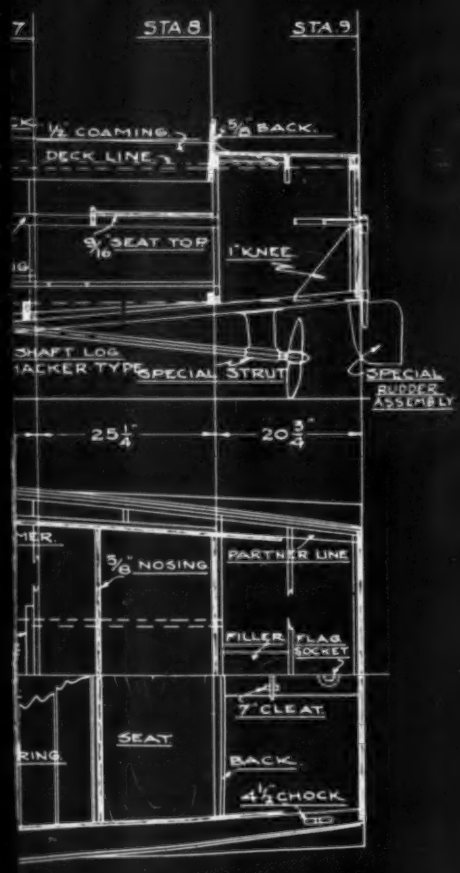
119 West 40th Street, New York, N. Y.

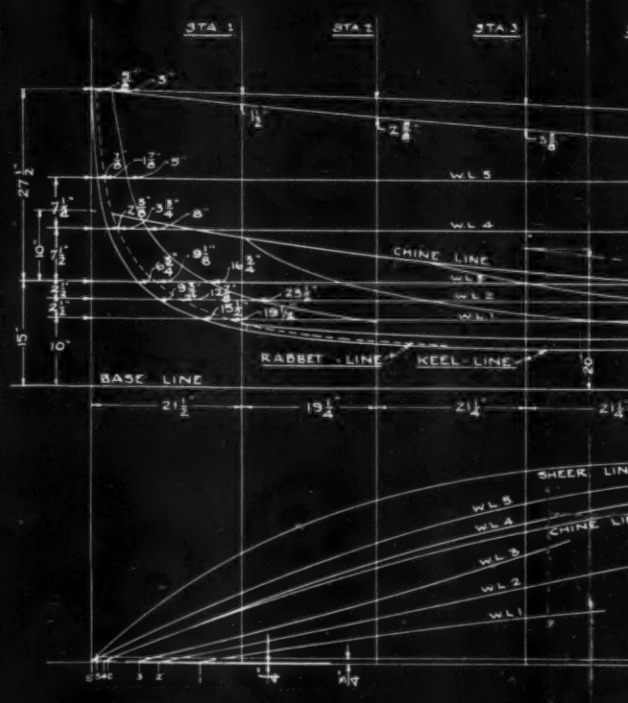
DIMENSIONS

Length	16'-9"
Beam	4'-11"
Draft	1'-3"

Designed by
JOHN L. HACKER

SCALE 1/2" = 1'

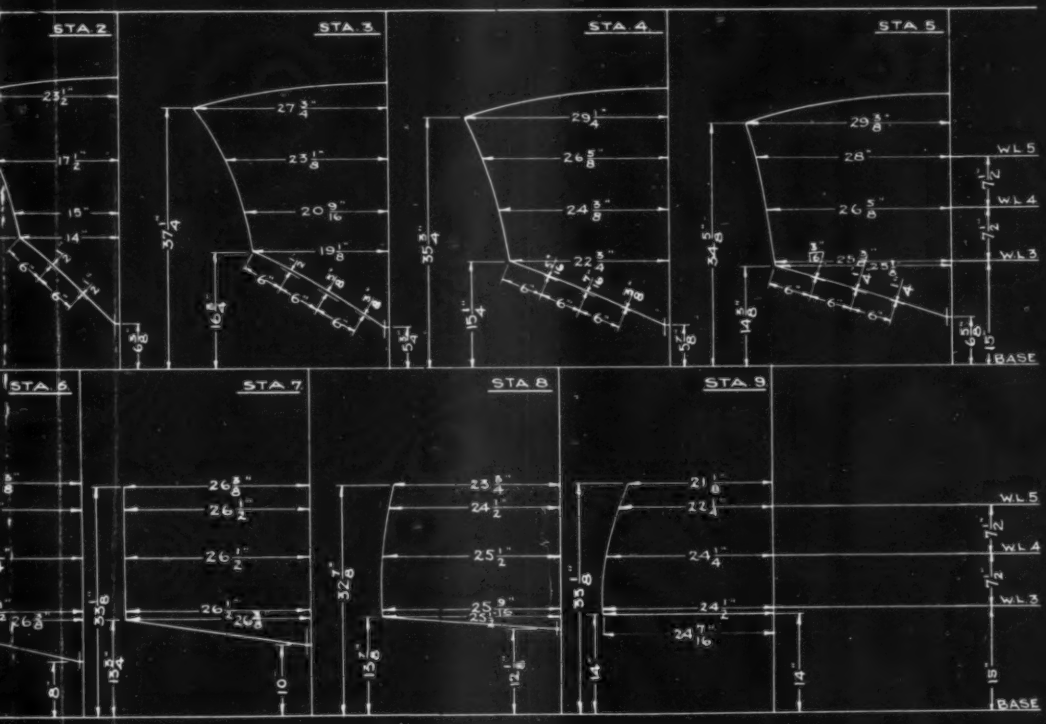




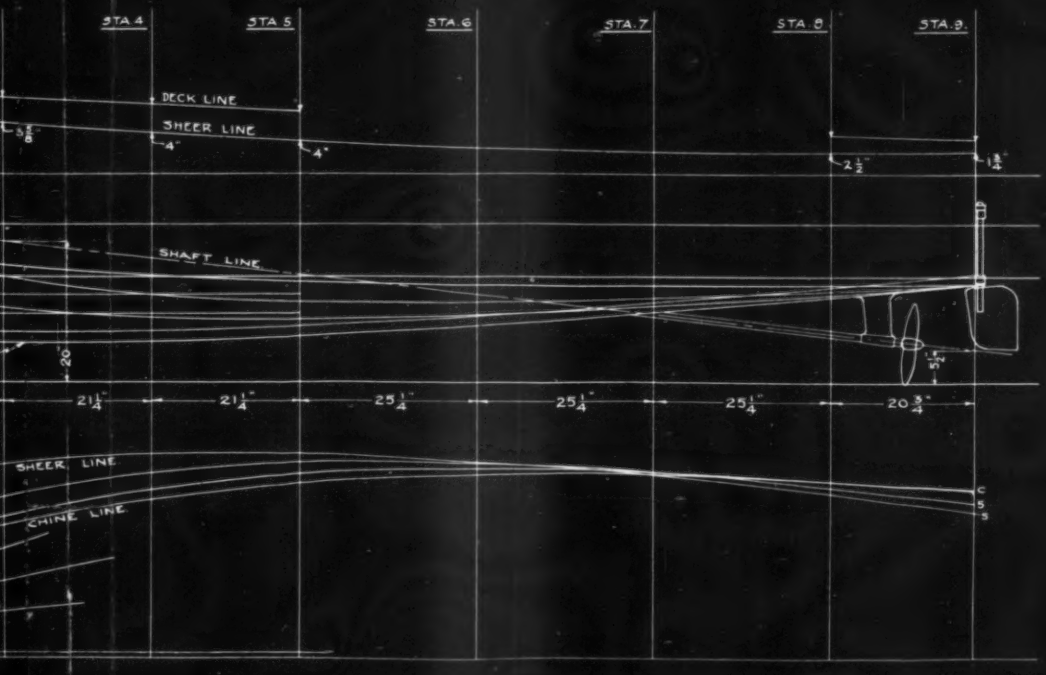
BUILD A BOAT SERIES

ITA - A 16′-9″ Runabout

Complete How to Build Plans



ALL DIMENSIONS TO OUTSIDE OF PLANKING.



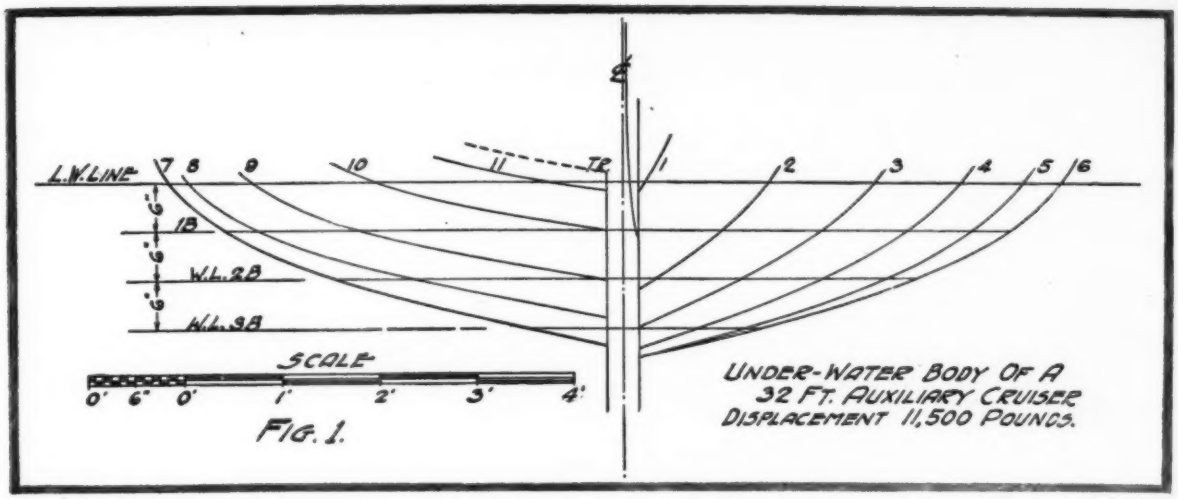


FIG. 1.

Why Does Your Boat Float at Her Waterline?

A Simple Discussion Which Anyone Can Understand of the Important Question of Displacement and Center of Buoyancy

By P. L. Rhodes

IT is true that there are many very able boat builders as well as the very large majority of boatmen and amateur designers who do not know how to figure the displacement, much less the center of buoyancy, of a boat from its lines. Most builders can look at a model, or the actual boat, and venture a good guess as to her displacement, but that is about as far as they ever go.

This may be accounted for, perhaps, in that it is quite possible to get along without knowing the actual displacement. Another reason is that they fear the problem, believing it to be beyond them and consequently never attempt to master it. As a matter of fact, the problem is a decidedly simple one.

If we are to make this article as simple and complete as possible, it is perhaps in order to state just what we mean by displacement. If our memory does not fail us, it was old Archimedes who first stated that "a floating body displaces its own weight in water." All of which means that when a boat is floating at rest it makes a "hole" in the water, having pushed aside an amount of water equal to its own weight. In other words, if we could freeze the water solidly about the boat, lift out the boat and fill the hole left by the boat with water, the weight of the water necessary to fill the hole level full would equal the weight of the boat. In any system at rest, the summation of all positive and negative forces must be equal to zero. For example, the force of the boat downward is counterbalanced by the force of the water upward. The boat's downward force is its weight, and the upward force is the buoyancy of the water, the two of course are equal.

The center of volume of the hole made by the boat in the water, or the center of volume of the underwater body of the boat (commonly designated as the carene), is the center of buoyancy of the boat. It is at this point that the entire upward force of the water may be said to act. It follows then that the boat and all its weights must balance around this point. Or, the center of gravity, or center of weight, of the boat must necessarily be in a position directly over or under the center of buoyancy. If it were not, the boat would trim by the bow, or by the stern, whichever the case might be, causing a new underbody to be formed and hence a longitudinal shift in the position of the center of volume. The boat will keep this position until the center of gravity is changed by the shifting of weights or the addition of ballast in the light end. The problem for the designer then is to so locate the principal weights so that the center of weight of all of them will come directly over the designed center of buoyancy.

In the case of cruisers of the slow and moderate speed types the question of the center of buoyancy is not so important. They do not sink deeply enough in the water by their own weight to have good weatherly qualities. So the boat must be brought down to the designed load waterline by the use of ballast, which in turn may be so placed as to bring the boat to the proper trim. That is, the ballast increases the displacement (by an amount equal to its own weight) and by virtue of its position near an end of the boat shifts the center of gravity toward that end.

The case is different, however, for runabouts and high-speed cruisers. Here the speed is largely a case of pounds displacement per horse power. Hence, for speed, it is quite illogical to carry around unnecessary weight. It is quite essential then that the builder give the boat just enough displacement to float the boat complete. Any excess in displacement, or any error in the location of weights relative to the center of buoyancy will call

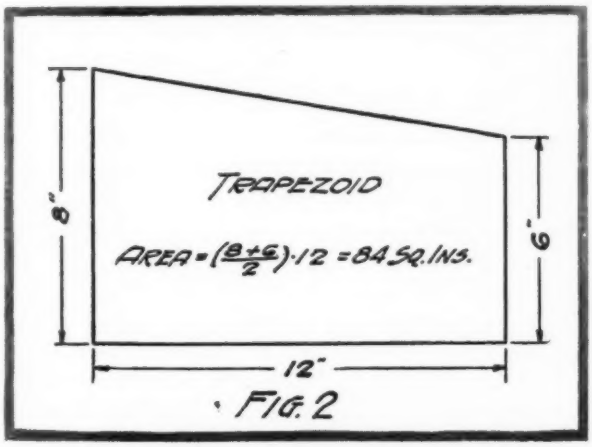


FIG. 2

Method of determining the area of a trapezoid

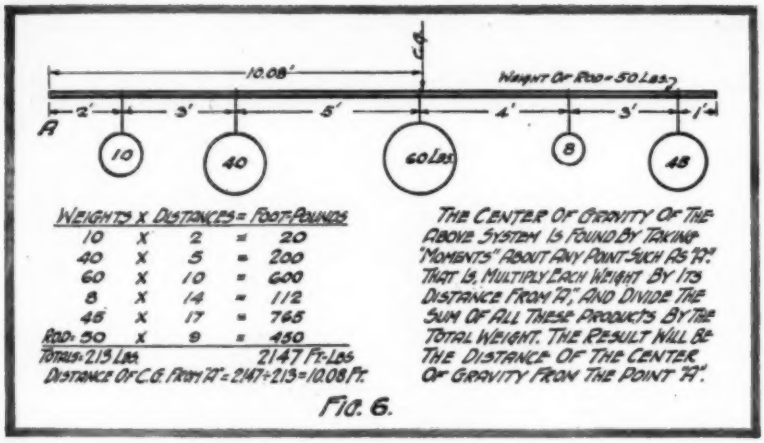

10.08'
C.G.
Weight Of Rod = 50 Lbs.
2'
3'
5'
4'
3'
1'
A
10
40
60 Lbs.
8
48
Weights x Distances = Foot-Pounds
10 x 2 = 20
40 x 5 = 200
60 x 10 = 600
8 x 14 = 112
48 x 17 = 765
Rod: 50 x 9 = 450
Totals: 213 Lbs. 2147 Ft-Lbs
Distance Of C.G. From "A" = 2147 ÷ 213 = 10.08 Ft.
The Center Of Gravity Of The Above System Is Found By Taking "Moments" About Any Point Such As "A". That Is, Multiply Each Weight By Its Distance From "A", And Divide The Sum Of All These Products By The Total Weight. The Result Will Be The Distance Of The Center Of Gravity From The Point "A".

FIG. 6.

How the center of gravity may be found

for the use of ballast. Hence, that builder who would build successful high speed craft, and success includes economy of operation, must have at least a working knowledge of the above-mentioned properties.

The question of the block coefficient, or coefficient of fineness as it is sometimes called, is so closely allied to displacement that a word can be said of it here without seriously digressing. It may be defined as the ratio of the volume of the underwater body to the volume of the circumscribed block. Better, it is the quotient found by dividing the volume of the underbody by the volume of a block having for its three dimensions: the length of the boat on the load water line; the greatest beam on the L. W. L., and the greatest draft to the rabbet. Now a cubic foot of fresh water weighs 62.5 pounds, salt water weighs 64 pounds, or 35 cubic feet of salt water weighs a ton (2240 pounds), 36 cubic feet for fresh water. In the case of the cruiser shown in Fig. 1, the displacement is 11,500 pounds, so that the volume of the underbody is $11{,}500 \div 62.5 = 184$ cubic feet. The volume of the circumscribed block is $29.75' \times 9.33' \times 1.83' = 510$ cubic feet, from which we get the block coefficient as $184 \div 510 = .36$ Thus the volume of the underbody is 36% of the volume of the block. As a rule, the block coefficient of boats varies from .34 to .45, as compared to .55 to .65 for a passenger liner, or .80 for an ocean freighter.

In finding the displacement, we are going to use what is known as the Trapezoidal Rule. By means of this rule we shall first find the areas (below the L. W. L.) of the stations and then the area under the curve of areas, an explanation of which will follow. Fig. 2 shows a trapezoid and how to find its area. Its area is evidently that of a rectangle plus that of a triangle, or a rectangle one side of which is the average of the two unequal legs. Fig. 3 illustrates the way in which a section is divided into trapezoids by the waterline. These may be figured separately and the areas totalled to get the area of the section. It should be noted that in all cases we use the half sections, finally doubling for total areas, volumes or displacement.

In Fig. 4, we have a large area composed of several trapezoids. Now, if the vertical lines, or ordinates, are equally spaced, we may deduce a simple expression for the total area. If we take each trapezoid separately we may write: Total Area

$$S=\left(\frac{a+b}{2}\right)+s\left(\frac{b+c}{2}\right)+s\left(\frac{c+d}{2}\right)+s\left(\frac{d+e}{2}\right)+s\left(\frac{e+f}{2}\right)+s\left(\frac{f+o}{2}\right)$$

$$= \tfrac{1}{2}\,S\,(a+b+b+c+c+d+d+e+e+f+f)$$

$$= \tfrac{1}{2}\,S\,(a+2b+2c+2d+2e+2f)$$

$$= S\left(\frac{a}{2}+b+c+d+e+f\right)$$

which is a very simple and easily used expression. Now if "a" were zero, as is "g", we would have a still simpler expression: Area = S(a+b+c+d+e+ etc.) when the end ordinates are not equal to zero they must be divided by two.

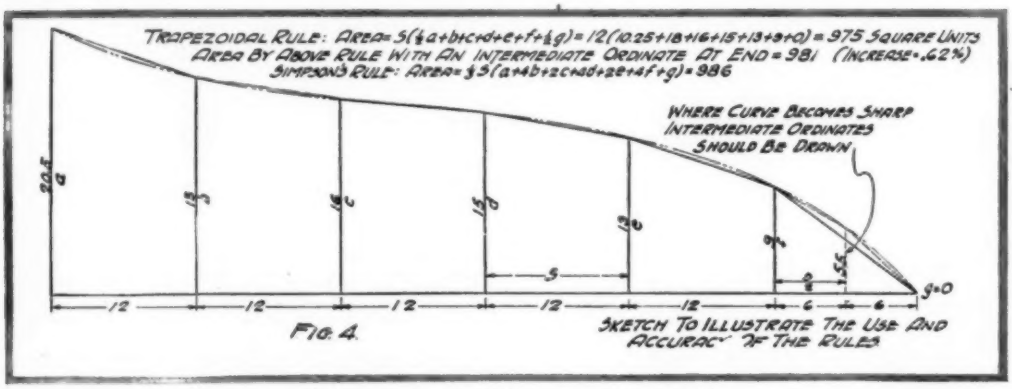


FIG. 4.

Sketch To Illustrate The Use And Accuracy Of The Rules

A large area composed of several trapezoids

From the foregoing it should be clear that the rule will apply to sections, as far as the waterlines are equally spaced, and also for the curve of areas.

In designing boat sections, or stations, should be taken at equal intervals along the l.w.l. length. If, after finding the areas of all the half sections, we put the areas vertically at the stations as distances and then draw a smooth curve through these points, we will have the Curve of Areas. Fig. 5 shows the curve of areas of a cruiser which has a l.w.l. length of 30 feet. Since the verticals, or ordinates, repre-

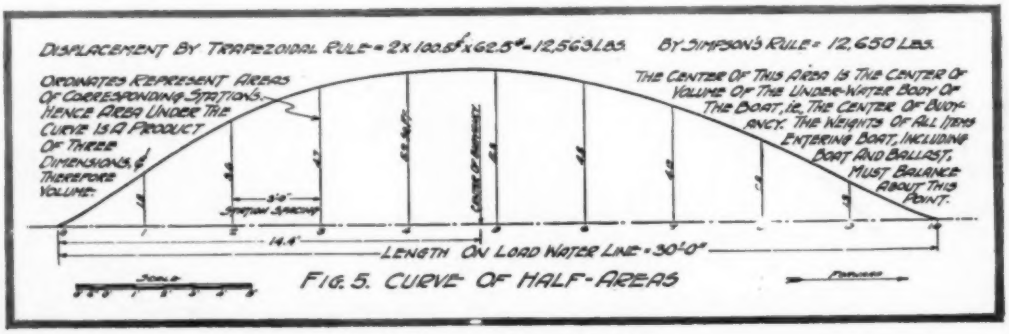

Displacement By Trapezoidal Rule = 2 x 100.8 x 62.5 = 12,563 Lbs. By Simpson's Rule = 12,650 Lbs.
Ordinates Represent Areas Of Corresponding Stations. Hence Area Under The Curve Is A Product Of Three Dimensions, & Therefore Volume.
The Center Of This Area Is The Center Of Volume Of The Under-Water Body Of The Boat, Ie. The Center Of Buoyancy. The Weights Of All Items Entering Boat, Including Boat And Ballast, Must Balance About This Point.
3.4
4.2
5.2 Max.
4.1
4.1
4.2
3.4
2.1
3'-0" Station Spacing
Center of Buoyancy
14.4'
Length On Load Water Line = 30'-0"
Scale
Forward

FIG. 5. CURVE OF HALF-AREAS

A typical curve of areas of sections

CALCULATION SHEET

DISPLACEMENT AND CENTER OF BUOYANCY

AREAS OF STATIONS

STATION	0	1	2	3	4	5	6	7	8	9	10
½ HALF BREADTH OF L.W.L.											
HALF BREADTH W.L. 1B											
" " W.L. 2B											
" " W.L. 3B											
" " W.L. 4B											
" " W.L. 5B											
½ HALF BREADTH OF W.L. 6B											
SUMMATION = (Σ)											
WAT. LINE SPACING x Σ = (3Σ)											
3Σ + HALF KEEL AREA = AREA											

	CENTER OF BUOYANCY			DISPLACEMENT	
	AREAS	DIST. TO STA. 0	PRODUCTS		AREAS
STATION 0				½ STATION 0	
" 1				STATION 1	
" 2				" 2	
" 3				" 3	
" 4				" 4	
" 5				" 5	
" 6				" 6	
" 7				" 7	
" 8				" 8	
" 9				" 9	
" 10				½ STATION 10	
TOTALS				SUMMATION (Σ)	

DISTANCE STA. 0 TO C.B. = TOTAL PRODUCTS ÷ TOTAL AREAS = _____ VOLUME = 2 x Σ x STATION SPACING _____

NOTE: ALL DIMENSIONS MUST BE IN FEET & DECIMAL FRACTIONS. DISPLACEMENT = VOL. x 62.5# _____

A convenient form of calculation sheet

sent areas and the base line is the l.w.l. length, the total area under the curve of areas will be one-half the volume of the underbody. Multiply by two and we have the total volume. Multiplying this volume by the weight of a cubic foot of water, i.e., 62.5 lbs., we get the boat's displacement in pounds.

The values of the sectional areas may be substituted in the expression and the displacement found direct without first drawing the curve of areas. But the curve of areas has other virtues besides being a picture to work from. If the curve is not fair either some mistake has been made in calculating sectional areas, or in the offsets, or the lines are not properly faired, so that it becomes a valuable check. Then, too, much good is gained by studying and comparing curves of areas, it tells how the displacement is distributed. Some designers start their design with the curve of areas, drawing the sections so that their areas agree with the curve. A fast boat will have a low flat curve showing the displacement well distributed throughout the l.w.l. length (the midship sectional area is kept low) while a slow cruiser will have more displacement amidships with the curve slightly hollow at the ends.

It should be noted that for a convex curve, such as a curve of areas, the trapezoidal rule loses the area between the trapezoid and the curve itself. If the curve has a point of inflection, as between C and D in Fig. 4, area is both lost and gained so that they tend to neutralize each other. More exact is Simpson's Rule, which takes account of this lost area. It may be stated:

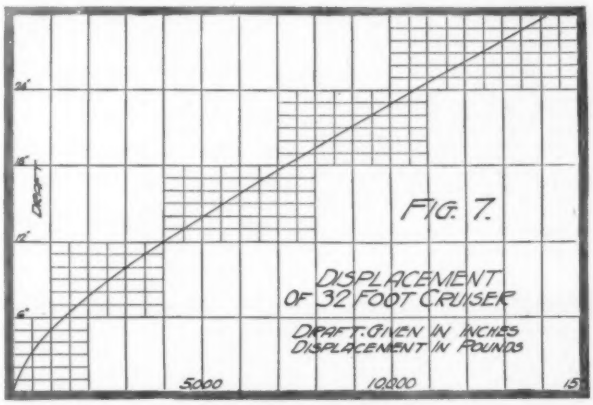
$$\text{Area} = 1/3S\,(a+4b+2c+4d+2e \text{ ——— } +n)$$

It is evident that the Trapezoidal Rule may be used regardless of the number of ordinates, while in order to use Simpson's Rule, there must be an uneven number of ordinates or an even number of spaces.

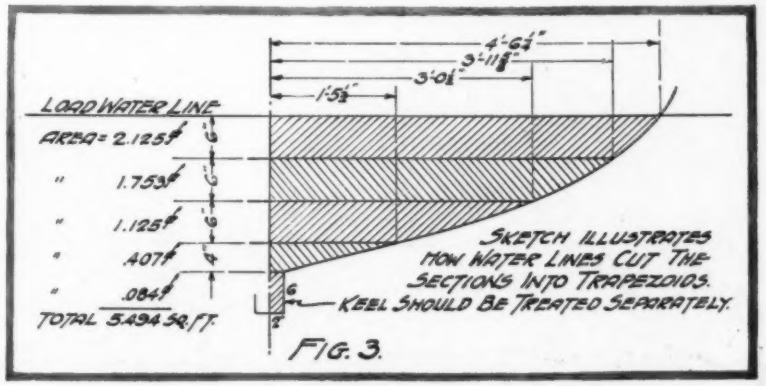
It is the aim of this article to present the subject in the simplest possible manner, and for this reason the Trapezoidal Rule has been emphasized. This rule is used in the Calculation Sheet which is shown to illustrate how the work may be carried out systematically. A similar sheet based on Simpson's Rule may readily be made.

Fig. 6 well illustrates how the center of gravity of a system may be found. Now the center of buoyancy in Fig. 5 is found in exactly the same way; the ordinates, or sectional areas, are treated as the weights and the result is the center of area of the figure, which is, of course, the longitudinal center of buoyancy. To find it we multiply the area of each section by its distance from any point, such as Station O, add up the products and divide by the sum of all the sectional areas. The result is the distance of the center of buoyancy from the point, Station O. After finding the center of buoyancy we may balance the principal weights about it by the same process. We may call all weights abaft it negative and those forward positive, then the sum of the forward products and the aft products must equal zero before the balance around the center of buoyancy. Thus, if an engine weighing 500 lbs. is 4 feet aft of the center of buoyancy, it will have a negative product, or moment, of 4 x 500 = 2,000 ft. lbs. Now this would be balanced by a water tank weighing 200 lbs. 10 feet forward of the center of buoyancy since 10 x 200 = 2,000 ft. lbs.

If the displacement is calculated up to each waterline and plotted, as in Fig. 7, we get a curve of displacement. This finds its principal use in the design of commercial vessels, as it affords a means of arriving at the cargo a boat will carry when loaded to different drafts.



The displacement curve



The way a section may be considered divided into trapezoids

Questions and Answers on Lesson No. 10

Piloting, Chart Work, Laying Courses and Determining Position

1. Q: A light bears 4 points off bow at 10 A. M. and is abeam at 10.45 A. M. Speed of boat 12 miles an hour. How far off is light at 10.45 A. M.?
   A: *Nine miles.*
2. Q: Course SE, bearing of light at 8 P. M. East, at 9 P. M. North East, speed of boat 10 miles an hour. How far off is the light at 9 P. M.?
   A: *Ten miles.*
3. Q: Course E bearing of light ENE at 8 P. M., North East at 8.30 P. M. Speed of boat 10 miles an hour. What is distance from light at 8.30 P. M.?
   A: *Five miles.*
4. Q: In question No. 3 how far off is light when abeam?
   A: *3¼ miles.*
5. Q: In question No. 3 what time will light be abeam?
   A: 8.51 *P. M.*
6. Q: An object 2½ points off bow at noon and abeam at 1.30 P. M. Speed of boat 8 knots. How far off is object when abeam?
   A: *6½ miles.*
7. Q: Object is 6 points off bow at noon, log reads 10.5, is abeam at 12.30 P. M. with log reading of 15.5. How far off is object at 12.30?
   A: *Twelve miles.*
8. Q: In question No. 7 what is the speed of the boat?
   A: *Ten miles.*
9. Q: Using the chart reproduced below, lay a course (or courses) from buoy B to Q (do not pass over Jackson Shoal or Duryee Middle Ground). Describe course or courses which you would lay off and follow for a night run.

   Answer: Starting from Buoy B, I would head for the light buoy on The Cows, which course I would hold until light buoy E, off Matinicock Point, was abeam. I would then change my course and head directly for the light on Eaton's Neck, which course would just clear the southerly point of Duryee Middle Grounds. When I reached this point, which would be determined by cross bearings on Matinicock Point light buoy and Great Captain's Island light, I would change my course again and head directly for point Q, inasmuch as the chart shows no obstructions and plenty of water from Duryee Middle Ground to point Q. I would endeavor to check my position by the buoy off Lloyd's Neck which, although not a light buoy, should be passed close enough abeam to be seen on the average night. Point Q would be located by cross bearings taken on Lloyd's Harbor light and Green's Ledge light. This would also be checked by a 90-degree bearing on Eaton's Neck light.

   (*Note:* Questions 10-25 refer to Question 9 and its answer.)
10. Q: State magnetic courses you would follow.
    A: *E x N ¼ N; E ½ S; E.*
11. Q: State compass courses you would follow (deviation ½ point W.).
    A: *E x N ¼ N; E x S; E ¼ S.*
12. Q: State true courses you would follow (variation 1 point W.).
    A: *NE x E ¼ E; E ½ N; E x N.*
13. Q: State length of each leg or course.
    A: *2⅛ miles; 3½ miles; 8¼ miles.*
14. Q: State total distance from B. to Q.
    A: 14 *miles (approximately).*
15. Q: State time to hold each course with a 10-mile boat (no current).
    A: *12¼ minutes; 21 minutes; 49½ minutes.*
16. Q: State total time to complete distance from B. to Q. (10-mile boat).
    A: 1 *hour* 23¼ *minutes.*
17. Q: State magnetic directions of cross bearings taken at end of second leg on Matinicock Point light and Great Captain's Island light.
    A: *SW ¾ W; NW x N ¼ N.*
18. Q: State compass directions of cross bearings taken at end of second leg on Matinicock Point Light and Great Captain's Island light (deviation ½ point W.).
    A: *SW x W ¼ W; NW x N ¾ N.*
19. Q: State time when the light on The Cows will be 4 points off the Bow (10-mile speed).
    A: *36¼ minutes from start.*
20. Q: State time when the light on The Cows will be abeam (10-mile speed).
    A: *53¼ minutes from start.*
21. Q: State distance off the light on The Cows when abeam.
    A: *2¾ miles.*
22. Q: State time Lloyds Neck buoy should be abeam.
    A: *One hour after start.*
23. Q: State time Eaton's Neck light should be 2 points off bow.
    A: *One hour after start.*
24. Q: State time Eaton's Neck light should be 4 points off bow.
    A: *One hour* 15 *minutes after start.*
25. Q: State distance off Eaton's Neck light when it is 4 points off bow.
    A: 1¼ *miles.*

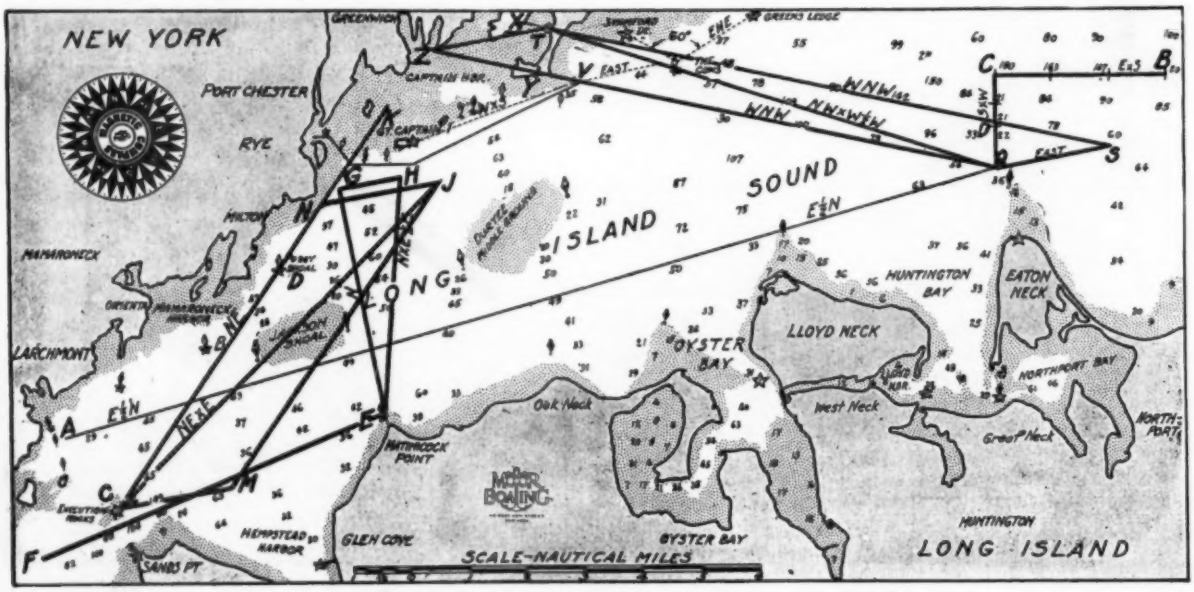


Illustration to be used in connection with problems Nos. 9 to 25 above

Water front view of the plant of the Defoe Boat and Motor Works

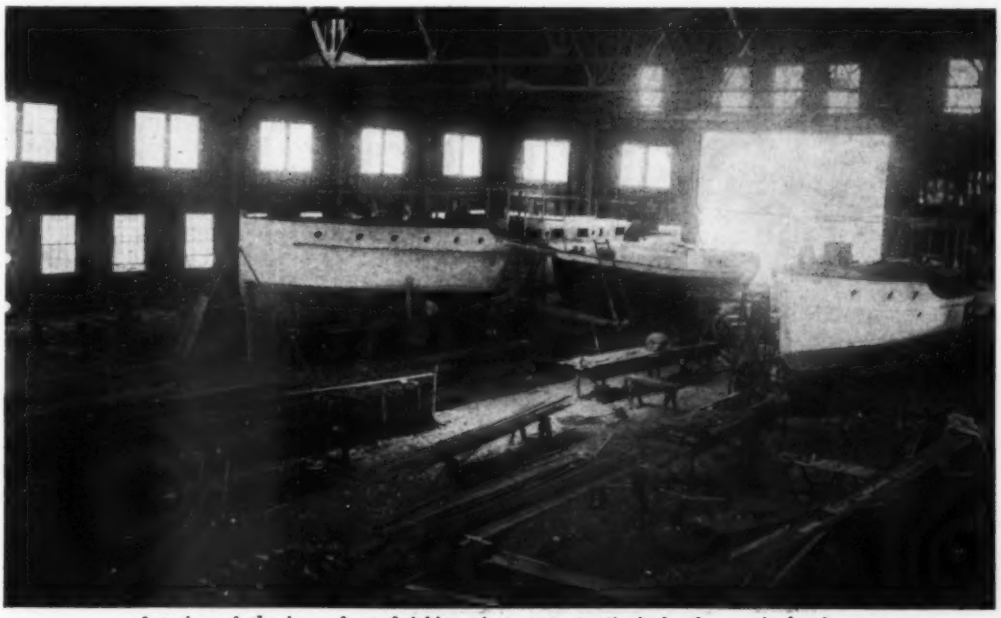
Modern Boat Building Plant on the Lakes

Reconstruction of the Shops and Buildings of the Defoe Boat and Motor Works Makes This One of the Largest Plants in the Middle West

OPERATIONS at the new plant of the Defoe Boat & Motor Works for the past season have added a number of interesting craft to the boating field, and the boats cover a wide range of sizes and descriptions. It was late last winter that this company was able to begin work in its new joiner and wooden boat plant, and since February construction work in both the steel and wooden boat divisions have been rushed with unceasing energy. In fact, there has been no well marked end to the past season, as work has continued throughout the fall, and is still going on, with no reduction in volume.

It may not be generally known that this company has established itself during the last few years on a new 14-acre site, with a water frontage of 1,800 feet, and operates a steel yard catering primarily to medium-sized steel craft of all types. The first steel contract handled covered eight 100-foot harbor mine planters for the Government. These were delivered in 1920, causing considerable comment on their fleet cruise from Bay City to New York via the St. Lawrence. Since that time the company has had steadily on the ways from one to four steel boats of various types—steel lighters, small passenger and freight ships, and the two 100-foot steel yachts on the ways at present for delivery next spring.

Last winter the old wooden boat and joiner plant of the company was torn down and a new one built on the new suite, adjacent to the steel plant. This new wooden boat plant is a high building with steel-trussed roof and 12,800 square feet of unobstructed floor space. A mould floor is built as a balcony across one end, and a mill with modern wood-working machinery adjoins. A track runs down the center of the main building permitting use of the locomotive crane inside and the inside loading of freight cars. At the waterfront end of the main building is a 100-ton marine railway of steel construction, on which steel ships up to 120 feet in length, after they are launched from the steel ways, are hauled into the joiner shop where the woodwork on them is completed under cover.



Interior of the large boat finishing shop, note particularly the ample headroom

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

New Kermath Engine Coming

A PRELIMINARY announcement has been made by the Kermath Manufacturing Company that they are hard at work and will shortly have ready for the market two new models of their popular engines. These will both have the same specifications as to bore and stroke, and will in general be of the same size throughout. The difference between them will be the speed at which they are able to run since one is designed to operate between 600 and 1,000 revolutions, developing 35 h.p., while the other will be built for a speed of from 1,500 to 1,600 revolutions, at which it will develop from 50 to 55 h.p. The weight of the medium duty engine will be about 900 pounds and will be entirely of iron construction. The high speed machine will be of aluminum wherever possible, the weight being only 650 pounds. Brief specifications for these are: Bore, 4⅛-inches; stroke, 5¼ inches; lubrication, force feed; five bearing crankshaft; Paragon reverse gear; detachable cylinder head; cylinders cast and block; an oil-cooling system, and complete water heating and distributing arrangements. The machine throughout is being built along the most modern and practical lines.

Evinrudes for Uncle Sam

Among the recent shipments, made by the Evinrude Motor Company, was one consisting of six of the heavy duty 3½ h.p. Evinrudes for the War Department. In order to make the transports' sailing date, the shipment was handled from Milwaukee by the Wells Fargo Express Company. There are hundreds of Evinrude's in use in the war, navy, and other departments of the Government and this order reflects again the confidence which is placed in the Evinrude's outstanding reliability.

A new booklet, The Story of the Evinrude, has just been issued by the Evinrude Motor Company, and this recites the improvements and progress made in the production of these machines. From 1910 to the present time this company has grown tremendously in size and its new plant has 80,000 square feet of floor space devoted exclusively to the production of these little engines. Readers of MoToR BoatinG can secure a copy of this booklet for the trouble of sending for it.

Daneva II, a 37½-foot cruiser, designed by Thos. D. Bowes, and equipped with a six-cylinder 200 h.p. Hall-Scott marine engine. She was successful in many competitions and won the express cruiser championship of the Jersey coast for 1922

Schedule of Winter Races and Other Boating Events

December 29-30-31: Los Angeles, Cal.
January 24, 25, 26: Bermuda.
February 15-18: New Orleans, La.
February 21 to March 3: Motor Boat Show, New York City.
March 3-10: Miami, Fla.
March 3: Long distance race; Miami Beach to Havana.
March 6: Cruiser race; Havana to Key West.
March 7: Cruiser race; Key West to Miami.
March 9-10: Runabout and cruiser races on Biscayne Bay.

Shark II of Boston is one of the newest of the 21-foot runabouts recently sold by the Toppan Boat Manufacturing Company of Medford, Mass. This little boat has proven exceptionally safe and stiff in the roughest weather. William I. Wood, her owner, states that it is the finest boat in his locality. During a recent squall near Boston, this little craft was taken down to Boston Light and a thorough test of its ability was made.
Many of these boats have been sent to Florida and in competition there have done remarkably well. They are regularly supplied with the 12 h.p. Kermath motor, with 25 h.p. optional.

Look for Belle Isle Boats at Miami

For the benefit of boating visitors to Florida during the winter season, the Belle Isle Boat & Engine Company of Detroit, have sent J. W. Burgess to Miami with one of the standardized Bear Cat runabouts, which will be displayed throughout the Florida season in Miami and its vicinity. It is proposed to have this boat compete in the winter regatta at Miami and also at New Orleans.

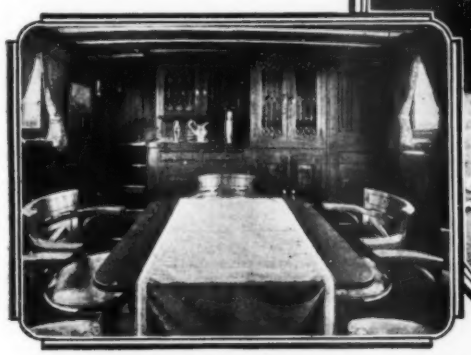
A Correction

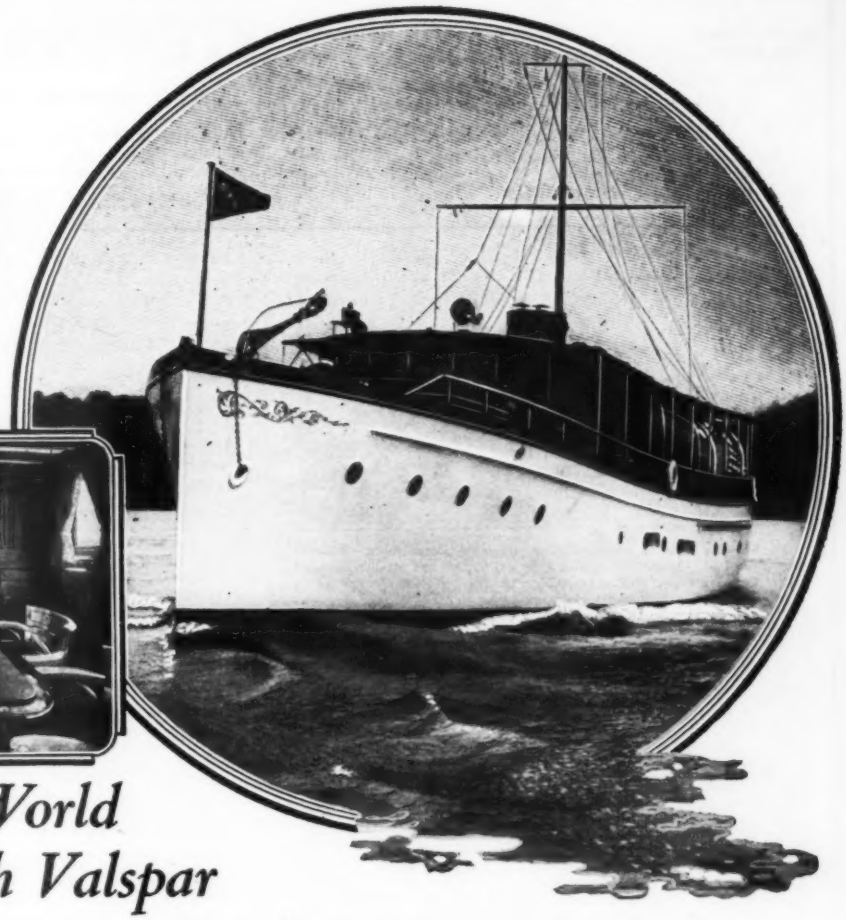
Through a confusion of the data on hand when the December issue of MoToR BoatinG was compiled, an error crept in on the captions accompanying the illustrations of the houseboats Domino and Terrybill on pages 12 and 13. The boats referred to were built at the plant of the Aero-Marine Plane and Motor Company, Keyport, New Jersey, under the supervision of Charles D. Fish. In addition Terry-

(Continued on page 51)

Speejacks is a 98-foot cruiser built specially for Mr. Gowen's round-the-world cruise by the Consolidated Shipbuilding Corporation. She is powered by two 250 h.p. Winton engines. Below is a view of the dining saloon.

Photos © by M. Rosenfeld, N. Y.



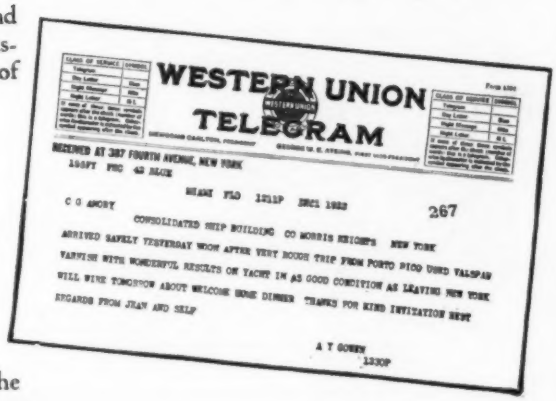


Around the World —with Valspar

Back from her perilous journey of 50,000 miles around the World, Speejacks cast anchor in Miami on Thanksgiving day. Read below what Mr. Gowen, owner of Speejacks telegraphed the day after his arrival.

C. G. Amory, Miami, Florida, Dec. 1, 1922
Consolidated Shipbuilding Co.,
Morris Heights, New York

Arrived safely in Miami yesterday after a very rough trip from Porto Rico. Valspar Varnish used with wonderful results on yacht. In as good condition as leaving New York. Will wire tomorrow about welcome home dinner. Thanks for kind invitation. Best regards from Gene and self. A. Y. Gowen



WESTERN UNION TELEGRAM

RECEIVED AT 387 FOURTH AVENUE, NEW YORK

C G AMORY MIAMI FLO 1211P DEC1 1922 267

CONSOLIDATED SHIP BUILDING CO MORRIS HEIGHTS NEW YORK

ARRIVED SAFELY YESTERDAY WHOM AFTER VERY ROUGH TRIP FROM PORTO RICO USED VALSPAR VARNISH WITH WONDERFUL RESULTS ON YACHT IN AS GOOD CONDITION AS LEAVING NEW YORK WILL WIRE TOMORROW ABOUT WELCOME HOME DINNER THANKS FOR KIND INVITATION BEST REGARDS FROM JEAN AND SELF

A Y GOWEN
1230P

Mr. Gowen may well be proud of his sturdy ship—the smallest power boat that ever circled the globe. And we are proud that we were able to contribute to her success. For, like so many fine craft in all parts of the world, Speejacks is Valsparred, of course!

VALENTINE'S
VALSPAR
The Varnish That Won't Turn White

VALENTINE & COMPANY
Largest Manufacturers of High-grade Varnishes in the World
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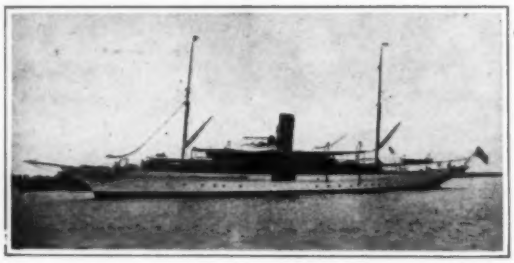
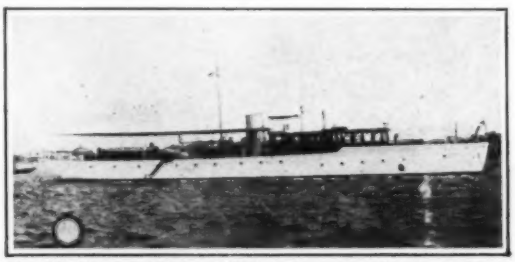
NAVAL ARCHITECTS---MARINE INSURANCE---YACHT BROKERS

25 BROADWAY, CUNARD BUILDING (Morris Street Entrance), NEW YORK

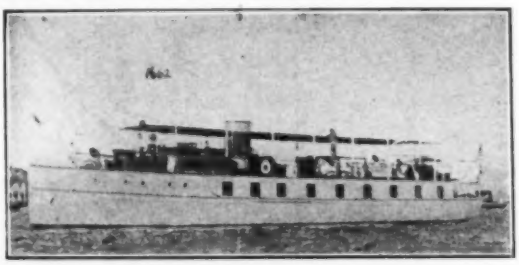
Complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER
A few are shown on this page. Plans, photographs and full particulars furnished on request.



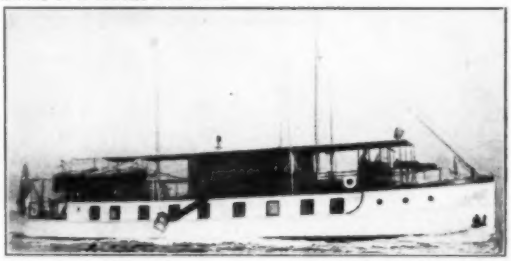
No. 341—For Sale or Charter—Large, sea-going steam yacht. Palatial accommodation. Unusual opportunity. Several similar and smaller available craft. Cox & Stevens, 25 Broadway, New York.



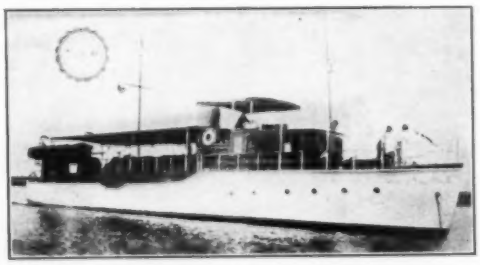
No. 885—For Sale—Handsome 120 ft. twin screw, steel, motor yacht; exceptionally fast and able. Splendid accommodation. Our design. Cox & Stevens, 25 Broadway, New York.



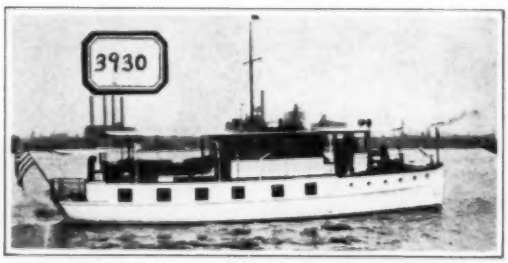
No. 1662—For Sale or Charter—Attractive 90-ft. modern power houseboat. All the comforts of a country home. Large saloon, four staterooms, two bathrooms, handsomely furnished. Cox & Stevens, 25 Broadway, New York.



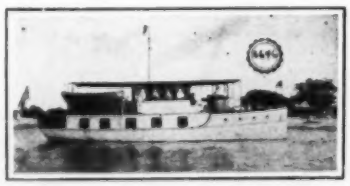
No. 3151—For Sale or Charter—Particularly desirable twin-screw houseboat; 77x17.6x3 ft. Speed 11 miles; two 6 cylinder 60-70 H.P. Standard Motors new 1919. Large deckhouse containing social hall; main saloon, two double and two single staterooms, two baths and toilet rooms, etc. Handsomely finished and furnished. Cox & Stevens, 25 Broadway, N. Y. C.



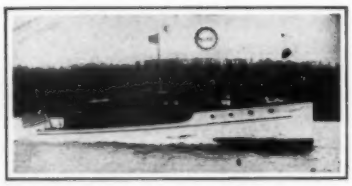
No. 3064—For Sale—Twin-screw semi-houseboat cruiser; 80'x16'x3'2" draft. Speed 11-12 miles. Deck dining saloon, 4 double staterooms, 2 baths and toilet rooms. Large available deck space. Cox & Stevens, 25 Broadway New York.



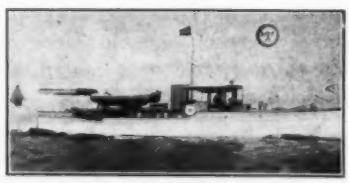
No. 3930—For Sale or Charter—Recently built motor houseboat; 61x16x3 ft. In commission. Speed 10 miles; 6 cyl. Standard motor. Large deck saloon, three staterooms, bathroom, etc. Excellent opportunity. Cox & Stevens, 25 Broadway, New York.



No. 2646—For Sale—Attractive 52 ft. power houseboat. Standard motor. Speed 10 miles. Deck dining saloon, double and single stateroom, toilet room and shower. Price reasonable. Cox & Stevens, 25 Broadway, New York.



No. 4050—For Sale—High class fast 52 ft. twin-screw enclosed bridge deck cruiser. Speed up to 20 miles; two cyl. 200 H.P. Speedway motors. Double stateroom, saloon with two pullman berths, toilet room, galley, etc. In commission. Cox & Stevens, 25 Broadway, New York.



No. 3529—For Sale—Handsome 60 ft. bridge deck cruiser. Speed up to 14 miles; six cylinder 60-70 H.P. Standard motor, new 1920. Semi-enclosed bridge, one pullman berth and transom in saloon, double stateroom, toilet room, galley, etc. Price and further particulars from Cox & Stevens, 25 Broadway, New York.

PLANS, PHOTOGRAPHS AND PRICES ON REQUEST

Advertising Index will be found on page 114

NAVAL ARCHITECTS
ENGINEERS
YACHT BROKERS
MARINE INSURANCE

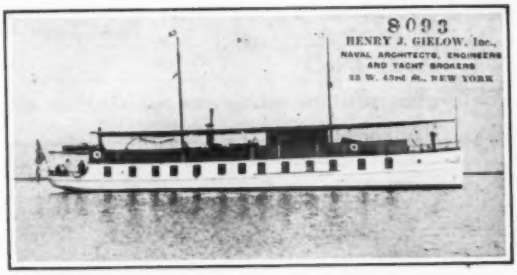
HENRY J. GIELOW, Inc.

25 West 43rd STREET, NEW YORK

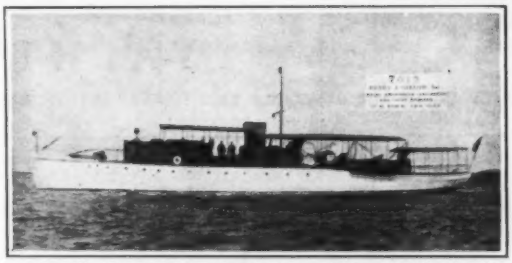
Tel.: Murray Hill 9134
Cable Address:
Crogie, New York
A.B.C. Code

Plans and specifications for new yachts of any size or type should be prepared now to assure delivery for next year. Have plans of new yachts, all types, on file now.

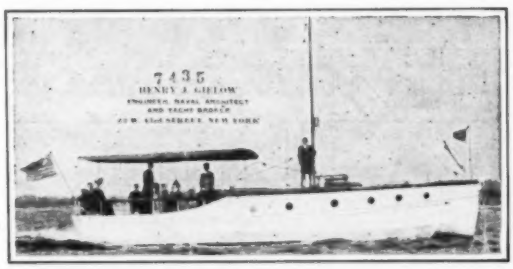
We have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats, on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat, upon request.



No. 8093—For Sale or Charter—Desirable 95 ft. twin screw power houseboat. Standard motors. Large saloon, three double staterooms, two bathrooms, and deck lounging saloon. Suitable for Northern and Southern cruising. Now in full commission. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

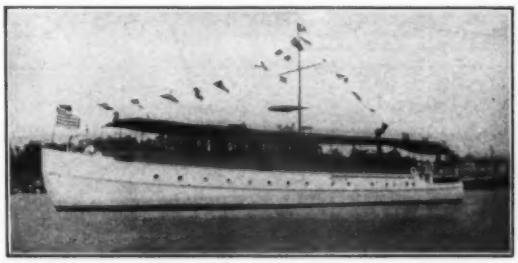


No. 7018—For Sale—Opportunity to buy twin-screw Diesel motor yacht reasonable. Delivery Sept. 1. 110 x 18 x 6 ft. 6 in. Copper sheathed. 3 large, airy staterooms, each with separate toilet room, one bath. Completely found, electric fans and fully screened. Able sea boat, has twice cruised West Indies. Fuel cost sixty cents per hour at 10 knots. All overhauled 1922. H. J. Gielow, Inc., 25 West 43rd St., New York City.

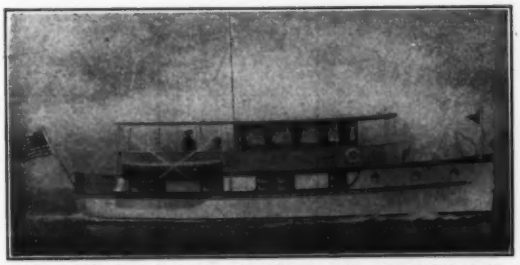


No. 7435—For Sale—Very attractive raised deck cruiser, 40 ft. x 10 ft. x 3 ft. 0 in. Speed 10 miles. 20th Century motor. Double stateroom, large saloon, galley, toilet room, etc. All in first class condition. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

No. 8032—For Sale or Charter most desirable 60-foot houseboat for Southern cruising. Large saloon, three double staterooms, bathroom. Exceptionally large deck space. All in first class condition throughout. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



No. 8067—For Sale or Charter—Desirable twin-screw cruising houseboat suitable Florida and Northern waters. 88 ft. x 19 ft. x 3 ft. 6 in. 20th Century motors. Boat entirely overhauled and refitted 1920, three double and one single staterooms, saloon, deck saloon, sleep 8. Electric light and heating plants new 1920. Bath, two toilets. Has cruised Florida each year, good sea boat. Reasonable. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



No. 8177—For Sale—New houseboat cruiser completed spring delivery. 48 ft. x 13 ft. 6 in. x 3 ft. One double, one single stateroom, large saloon with two berths and deck saloon 12 ft. x 8 ft., sleeps six. Crew stateroom forward. Heavy construction, finished mahogany and cream enameled. Delco lighting plant. 40-50 H.P. 20th Century engine. All best workmanship. Speed 9-10 miles. Popular type for Florida and Northern cruising. Price reasonable based on present reduced building cost. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

No. 8054—For Florida Charter—Desirable 66-ft. Cruising Houseboat. Large saloon, one double and four single staterooms, bathroom. Large deck saloon. Now in Southern waters. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

No. 8077—For Sale—Desirable cruising houseboat all in fine condition. Thoroughly overhauled 1921. Inspectable New York. 75 ft. x 16 ft. x 3 ft. 6 in. Winton motor, 6 cylinder, 70 H. P. Three large staterooms, large deck saloon; newly furnished, screened throughout. Heavily built, able sea boat. Speed 10-11 miles. Price attractive. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

TAMS & KING

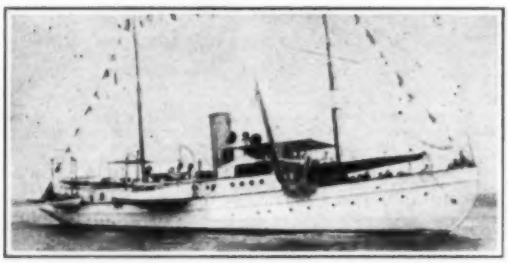
FORMERLY TAMS, LEMOINE & CRANE

NAVAL ARCHITECTS AND YACHT BROKERS

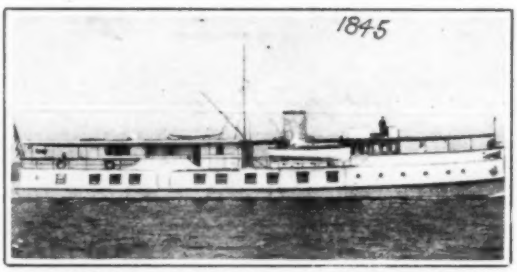
Telephone 4510 John

52 Pine Street New York City

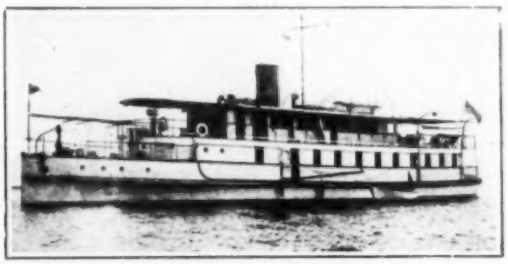
OFFER ALL OF THE DESIRABLE YACHTS AVAILABLE FOR SALE AND CHARTER, SOME OF WHICH ARE ILLUSTRATED BELOW



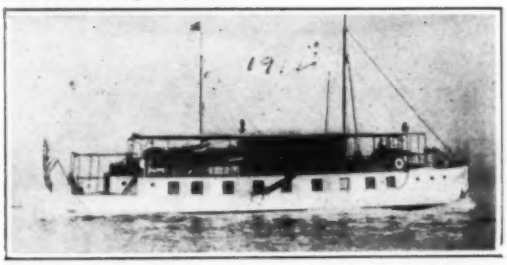
No. 26E—Sale—Ocean-going steam yacht—158′ x 127′ 7″ x 24.8′x 12′ 9″ draft. Built 1913. Commodious owner's accommodations—Completely and thoroughly overhauled, refitted and refurnished under our supervision in Fall 1920.



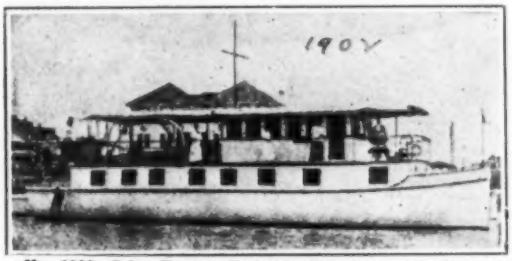
No. 1845—Sale—Modern Triple Screw Houseboat—120′ 9″ x 21′ x 3′ draft. Designed by Tams & King and built in 1920—3 Meitz & Weiss Oil Engines—6 staterooms, 4 bathrooms, dining saloon, deck sitting room, etc.



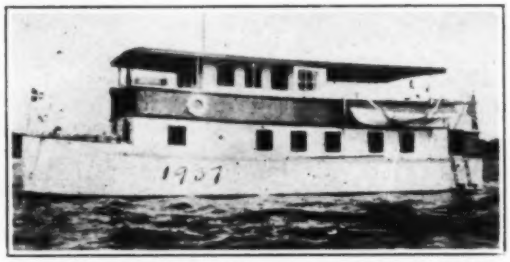
No. 1895—Sale—charter—120′ Twin-Screw Houseboat, 2.6 Cylinder, 220 H.P. Standard Motors—7 staterooms, 2 bathrooms, large dining and sitting room.



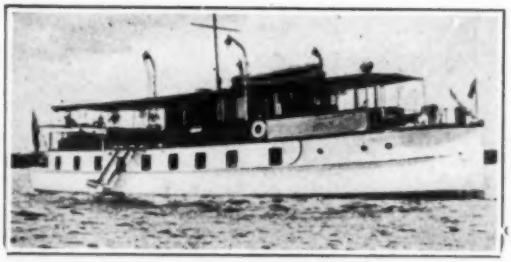
No. 1912—Sale—Charter—Attractive 77′ Houseboat—2-50 H.P. Standard Motors—Speed 11 miles—4 staterooms, dining saloon, deck saloon and 2 bathrooms.



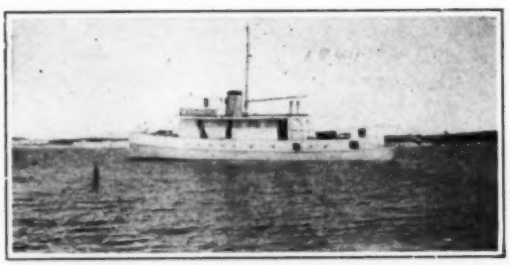
No. 1902—Sale—Charter—Desirable Houseboat, 64′ 6″ x 17′ 6″ x 5′ 2″ draft. Built 1915—50 H.P. 20th Century Motor. Speed, 9 miles—3 staterooms, dining saloon and deck saloon, bathroom, etc.



No. 1937—Sale—Charter—50′ x 15′ x 3′ draft—Built 1919. 3 staterooms, dining saloon and bathroom.



No. 1800—Charter—80′ Mathis type Houseboat, 2-70 H.P. Standard Motors—4 staterooms, 2 bathrooms and 2 saloons.



No. 1941—Sale—Charter—Semi-Diesel Houseboat—100′ x 23′ x 4′ draft—Built 1920—2-100 H.P. Fairbanks-Morse Engines. Large owner's accommodations.

Advertising Index will be found on page 114

YACHT BROKERS
NAVAL ARCHITECTS

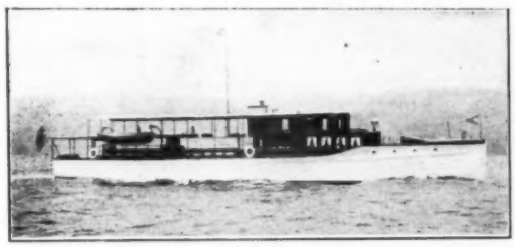
Henry C. Grebe & Co., Inc.

MARINE INSURANCE
SURVEYING

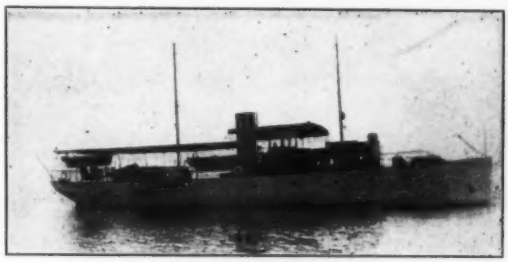
6 NORTH MICHIGAN AVE., CHICAGO

TELEPHONE CENTRAL 1261

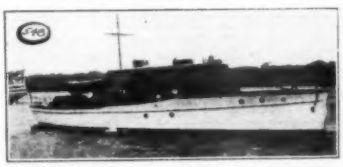
We have a complete list of all steam and power yachts, auxiliaries, and houseboats, which are for SALE and CHARTER. Plans, photographs and full particulars furnished on request.



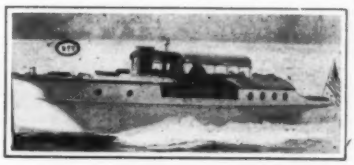
No. 906—For Sale—Attractive 81 ft. x 14 ft. 6 in. x 3 ft. 6 in. twin-screw power yacht. Two double and one single stateroom. Pullman berth in lobby, bathroom and two toilets. Enclosed bridge deck, large cockpit and spacious deck. Equipped with two 150 h.p. motors. Speed 14 to 16 miles per hour. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



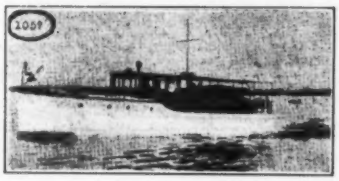
No. 584—For Sale or Charter—90 ft. twin screw cruiser. Recent build and modern design. Winton motors. Speed up to 14 miles. Dining saloon on deck. Five staterooms, etc. Attractively furnished and in excellent condition throughout. Located Great Lakes. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



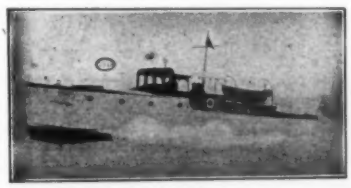
No. 548—For Sale—Attractive bridge deck power cruiser. 65 ft. x 13 ft. x 4 ft. 8 in. draft. Thoroughly modern and splendid seaboat. Bargain for immediate sale. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



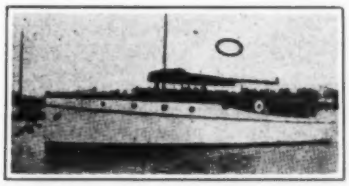
No. 977—For Sale—50 ft. Great Lakes Cruiser. Speed up to 20 miles. Accommodate 6 to 8. Excellent condition throughout. New motor 1922. Reasonable price. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



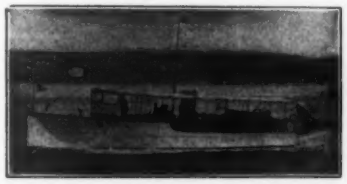
No. 1057—For Sale—Twin screw V-bottom Rochester cruiser. New 1921. 50 ft. x 12 ft. x 3 ft. Very complete and in excellent condition. Sleeps six comfortably in owner's quarters. Has comfortable deckhouse and roomy after deck. Reasonable price. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



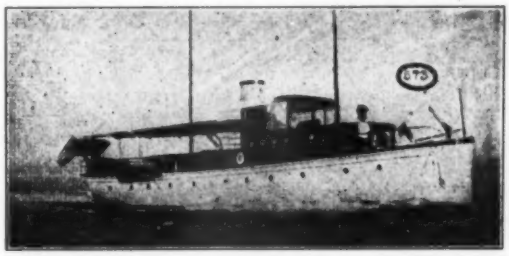
No. 1018—For Sale—54 ft. Great Lakes express cruiser. Speed 20-25 miles per hour. Double stateroom and large main saloon. Two toilets and shower bath. Well equipped and in excellent condition. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



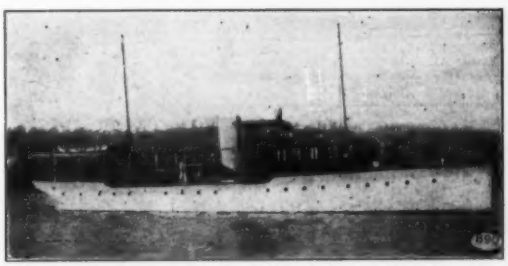
No. 106—For Sale—40 ft. x 10 x 2 ft. 10 in. power yacht. One double stateroom, dining saloon, galley, two toilets. Sleeps 6-8. Speedway self-starting motor. Low price. Excellent condition. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 1019—For Sale—60 ft. twin-screw express cruiser. Excellent seaboat. Speed up to 22 miles per hour. Accommodations excellent. Price reasonable. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 573—For Sale—91 ft. x 16 ft. x 4 ft. 3 in. twin-screw gas yacht. Built 1917. Winton motors. Speed up to sixteen miles. Roomy accommodations with every convenience. In excellent condition. Equipment of the best. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



No. 890—For Sale—Modern 95 ft. twin-screw motor yacht. Speedway motors. Speed 12 to 14 miles. Deck dining and music saloon, four staterooms, bathroom and all modern conveniences. Large deck space. Handsomely furnished. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.

HENRY H. JENNINGS HERMAN JAGLE

H. H. JENNINGS COMPANY

Telephones Beekman 5456 and 5457

YACHT and SHIP BROKERS

TRIBUNE BUILDING

Surveying

Cable Address Yachtbroco, Newyork

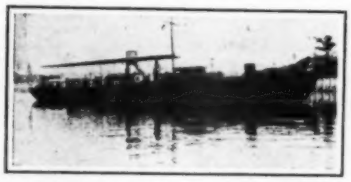
154 Nassau Street New York City

Marine Insurance

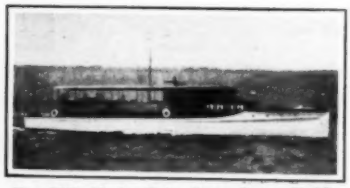
Our 25 Years' Experience and Our Knowledge of the Yachts We Offer, Insure Satisfaction to Clients

SEND SIX CENTS FOR OUR ILLUSTRATED CATALOGUE

2266—Mahogany V Bottom Runabout, 32' long, 6' 6" Beam. Built 1921. 200 H. P. Hall Scott Motor, 6 Cylinders. Speed up to 36 miles. Auto control. Has windshield. Top and side curtains, self-starter, etc. Cost new $10,000. Bargain for quick sale.



No. 1780—75 ft. Twin Screw Power Yacht. Two double staterooms; Three berths in main saloon; Sofa berth in deckhouse; Two toilets and 15-18 Knots. Price attractive.



No. 2039—80 ft. Twin Screw Power Yacht. Three staterooms; Saloon and Dining saloon. Two toilets and bath. Two 150 H. P. Motors; Speed 15 miles. Electric lights, etc. Splendid proposition.

No. 4439—60 ft. Power Houseboat. Two double and one single staterooms; Two berths in dining saloon; Sofa berth in deckhouse; Two toilets and bath. Captain's room, etc. 70-90 H. P. Standard Motor. Speed 12-13 miles. Hot water heat; Electric lights, etc.

No. 2171—60 ft. Twin Screw Power Yacht. Double stateroom; Main saloon with two berths. Bath; etc. Two 50 H. P. Sterling Motors. Speed 14 miles. Electric Lights, etc. Splendid proposition.

No. 2359—50 ft. Twin Screw Express Cruiser. V Bottom; Double planked mahogany and teak. Two 200-225 H. P. Sterling Motors; Speed 30-32 miles. Ideal for ferry service.

FRANK BOWNE JONES

TELEPHONE Whitehall 1170

YACHT AGENT and SHIP BROKER

Branch Office Miami, Fla. Winter Season

CABLE ADDRESS "Windward", N. Y.

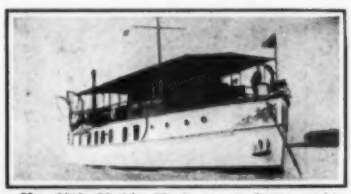
CUNARD BUILDING, 25 BROADWAY, NEW YORK

OFFICE No. 1051

SALES AND CHARTERS—NAVAL ARCHITECTURE—MARINE INSURANCE

No. 5547—For Sale or Charter—170 ft. sea going steel steam yacht. Classed A1. Best design and build. Splendid vessel. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 6692—For Sale—83 ft. Twin Screw Power Yacht; strictly modern yacht; 20th Century Motors; Deck saloon; double and single staterooms, dining saloon and bath. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.



No. 6913—Mathis 75 ft. power house yacht. Desk dining saloon and 4 staterooms, baths, handsomely furnished. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 2398—For Sale—Practically new 75 ft. Lawley Twin Screw Express Yacht; Speed 21 miles per hour; Sterling motors; Excellent accommodations; Price reasonable. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

No. 7161—50 ft. Matthews Bridge Deck Cruiser. New Sterling motor 1921. Speed 13 miles; main cabin forward; two double staterooms aft. Frank Bowne Jones, Yacht Agent, 25 Broadway, New York.

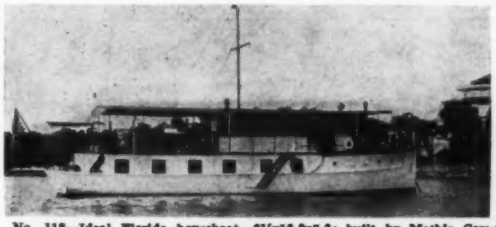
Advertising Index will be found on page 114

WILLIAM GARDNER & CO.

Naval Architects, Marine Engineers and Yacht Brokers

Phone 8638 Bowling Green — No. 1 BROADWAY, NEW YORK — Cable Address: Yachting, N.Y.

No. 1863—Twin screw power yacht, 96'x16'x4'6"; built 1917; two 6 cylinder Winton motors; flush deck type, with continuous deckhouse. Splendid boat for Southern waters. Best possible condition.



No. 118—Ideal Florida houseboat, 61'x16.2x3.3; built by Mathis Company in 1920; six cylinder Standard motor; two double and one single stateroom, two saloons, etc.

No. 1949—Able raised deck cruiser, 62 ft. x 12.9; new 8 cylinder Sterling motor; speed 13½ miles. Single and double staterooms, main saloon, etc. In first class condition.

No. 2303—Enclosed bridge deck cruiser, 52' x 12.8; two 6 cylinder 150 H.P. motors; speed 15/20 miles; stateroom, large saloon, bath room, toilet room, etc. In commission Southern waters.

WILLIAM GARDNER & CO. HAVE A COMPLETE LIST OF YACHTS OF EVERY DESCRIPTION FOR SALE AND CHARTER. PLANS, PHOTOS, AND FULL PARTICULARS FURNISHED ON REQUEST

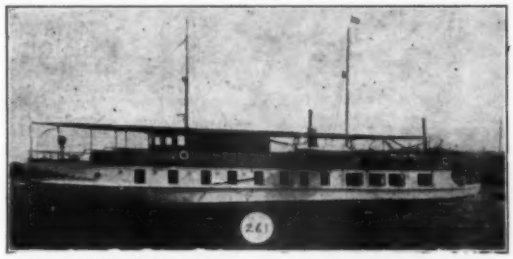
Suite 401
50 East 42nd St., New York City
(Opposite Grand Central Station)

R. M. HADDOCK

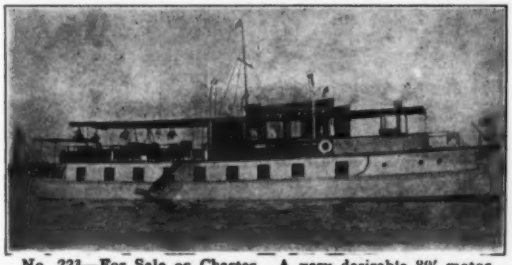
NAVAL ARCHITECT and YACHT BROKER

Complete lists of all yachts now available for sale or charter

Marine Insurance
Telephone
Vanderbilt 10439



No. 261—For Sale. Twin-screw motor houseboat. L. O. A. 95 feet. Large saloon, three double staterooms, two bathrooms and a deck lounging saloon. Standard motors. An excellent cruising home for either Northern or Southern waters.



No. 223—For Sale or Charter. A very desirable 80' motor houseboat. Suitable for cruising along the coast and inland waters. As the draft of this yacht is only 3' one can sail very close to the shore and get all the enjoyment that is possible in this type of yacht. Photograph and description upon request.

No. 234—For Sale. A Mathis designed and built 61-foot motor houseboat. A very desirable type of yacht for Florida waters. Accommodations consist of two double and one single staterooms, one bath and two toilets. Two additional berths in saloon and one in deck house. Plenty of deck space. Standard motor. Speed up to 11 M.P.H. Photograph, plan and description upon request.

No. 238—For Sale or Charter. A 52-foot Mathis designed and built houseboat. Standard motor. Speed up to 9-10 M.P.H. Accommodations consist of one double and one single stateroom. Two additional berths in saloon and one deck house, bath and toilet. Fully screened throughout. Photograph and description upon request.

THE MoToR BoatinG MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:
Cut one inch deep, two inches wide..... $ 7
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Cut 2¼ inches deep, seven inches wide..... $20
Terms: Cash with order.

Opportunities for the Motor Boatman

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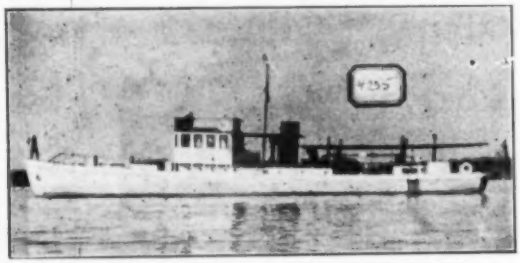
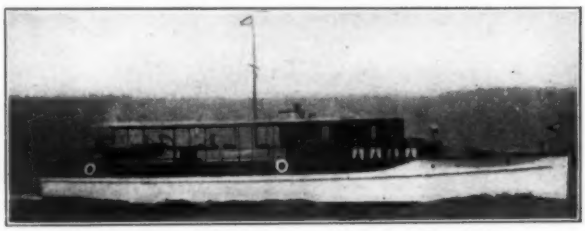
Classified advertisements set entirely in small light face type. No extra charge for capitals. Bold face type used at display rate, $12 per inch, single column.



No. 4235—For Sale—Twin Screw 110 ft. cruising power yacht. Speed up to 17 miles; two 6 cylinder 220 H.P. Standard motors. Dining saloon in deckhouse, two transoms in main saloon, two double and one single staterooms, bath and three toilets, etc. Very able, comfortable; well laid out. Exceptionally heavy construction. For full particulars apply to Cox & Stevens, 25 Broadway, New York. Telephone 2700 Whitehall.



For Sale—No. 1492—81' twin-screw cruiser, speed 17 miles, 1 single and 2 double staterooms, bath, etc. An unusually high class yacht which has had the best of care and can be purchased at a very reasonable price. An excellent opportunity for one desiring a most attractive yacht. Further particulars from Harry W. Sanford, Yacht Broker, 501 Fifth Ave., New York City, N. Y.—Other yachts of different lengths and types for sale or charter.

WANTED—Heavy duty engine about 24 or 30 H.P. Standard preferred. Give number of engine when answering. Mairs, 867 West 181st Street, New York City.

For Sale—One Marine engine, Regal type L two-cylinder, four-cycle, reground cylinders, new pistons, rings and wrist pins. All new bearings, size 5" by 5". Guaranteed to be as good as new. No clutch, otherwise complete. No agents. A. E. Krottnauer of Precision Grindings Works, Wilmington, N. C.

Wanted—A party boat that will carry up to 150 or over. I don't care how big it is, I want the room. James J. Lawler, 82 Rocky Hill Ave., New Britain, Conn.

One 4-cyl. 4-cyc. 20 H.P. T head Loew Victor marine engine. Medium duty. Built-in clutch. A bargain at $175. Further information write Ray Van Blarcum, 523 E. Madison, Sandusky, Ohio.

FOR SALE or will trade on good medium sized runabout. Single step nineteen-foot eleven inch Hydroplane in good running condition, equipped with six cylinder 5½x5½ motor, two spark Bosch Magneto and Zenith Carburetor. Special Paragon Racing Clutch, also a special built Transmission. Box 47, Motor Boating.

For Charter—For one month or season four raised deck cruisers from 35 to 40 feet. These boats are up to date and can be chartered at the low price of 350 to 450 dollars, and gasoline per month each, with accommodations for ladies. Why pay Hotel bills when you can live as well and enjoy yourself better on a cruiser. Capt. J. L. Scott, 236 S. W. North River Drive, Miami, Fla.

TRIMOUNT WHISTLE BLOWER OUTFITS
Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.
Made in 3 sizes.

TRIMOUNT ROTARY HAND BILGE PUMPS
All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.
50 Heath Street Boston, Mass.
(Factory: 292 Whiting Ave., E. Dedham, Mass.)

For Sale—Gear box, special oversize case-hardened gears and shafts on roller bearings in aluminum case, 1¼ to 1 ratio, used 3 months in a runabout. $100. Also Blood Bros. universal joint, $20. Also Paragon gear for 60 H.P. Also Spicer universal joint, $30. Motor Boating Box 46.

Wanted—Six Cylinder Grimm engine. Write full particulars and cash price; act quickly. Address Box 48, MoToR Boating.

For Sale—Sterling Marine motor and clutch, one unit completely rebuilt, reground cylinders, new pistons, new rings and new wrist pins. All bearings renewed and scraped in. Crankshaft reground. Size four-cylinder four-cycle T-head 6½" by 7" rated after regrinding 50 H.P. to 80 H.P. This motor is absolutely guaranteed as good as new. No agents. A. E. Krottnauer of Precision Grindings Works, Wilmington, N. C.

For Sale—30' x 14' 6". Harbor tug or Supply boat. With two cylinder 45 H.P. Gulowsen-Grei-Crude-oil engine. Joes clutch and electric starting device. Separate engine with air compressor, boat fully equipped and ready for work, boat, engine and equipment new—1921. Will sell for one-half of actual cost. Also one large size pentwater lifter, with twin oscillating cylinders for steam—Kriebel make, used only one season. Frank J. Albright Company, La Pointe, Wisconsin.

One Cylinder

2½ HP Eagle	$ 30.00
6 HP Gray	$ 55.00
8 HP Caille	$ 65.00

Two Cylinder

6 HP Gile	$ 45.00
8 HP Gray	$ 75.00
10 HP Wisconsin	$ 55.00
15 HP Ferro	$ 45.00
20 HP Roberts	$ 75.00

Three Cylinder

12 HP LaCrosse	$ 35.00

Four Cycle

8 HP Dunn, 2 cyl.	$ 65.00
12 HP Samson, 3 cyl.	$ 95.00
16 HP Dunn, 4 cyl.	$115.00
30 HP Erd (new) 4 cyl.	$225.00
45 HP Holmes, 6 cyl with gear	$450.00
100 HP Curtis, 8 cyl 0x5 model	$275.00
2 cyl Avery opposed tractor motor, 7¼ by 8½	$135.00

BADGER MOTOR COMPANY
Milwaukee, Wisconsin

Wanted—(G. R.) Dolphin or Sea Gull Sterling Engine, or six cylinder Hall-Scott Marine Engine. State particulars and lowest price.
Salisbury, 61 Ann St., New York City.

For Sale—Speedway engine, 6 cyl. 140-H.P. 8½" bore, 10" stroke, excellent condition. Address, H. Chrystal Iron Works, 98 VanDyke St., Brooklyn, N. Y.

Van Blerck Motors Rebuilt, cylinder ground oversize "M" and "M M" piston's rings and wrist pins. All work factory done. J. F. Johnson & Co., 3537-39 N. 9th St., Phila., Pa.

"GRAY BARGAIN LIST"

2-Cylinder—12 to 15 H.P. Fairbanks Morse	$100.00
2- " —16 H.P. Model "T" Gray	190.00
2- " — 2 H.P. Detroit	25.00

Above in First Class Running Order
4-Cylinder 10 to 25 H.P. Gray used as demonstrator guaranteed equal to new, $398.00.
Berling, Splitdorf, & Kingston Magnetos 5.00 ea.
Gray Motor Co., 2106 Mack Ave., Detroit, Mich.

BARGAIN PRICES

We have the following new Scripps, Red Wing and Arrow motors that we are selling at BARGAIN PRICES, away below cost:
1 SCRIPPS 60-75 H.P., 6-cylinder, four-cycle Motor with Bosch high tension magneto, spark plugs, wiring, switch, carburetor and controls, enclosed reverse gear, Leece-Neville electric starter, Williard storage battery, propeller and shaft equipment. BARGAIN PRICE, $1,250.00.
3 RED WING THOROUGHBRED, 32-40 H.P., four-cylinder, four-cycle motor, same complete equipment as listed above for SCRIPPS Motor. BARGAIN PRICE, $695.00 each.
5 ARROW 2½ H.P. single cylinder, two-cycle motors with batteries, coil, spark plugs, carburetor, wiring and switch, propeller and shaft equipment complete. BARGAIN PRICE, $50.00 each.
2 ARROW 5 H.P. two-cylinder, two-cycle Motors, same equipment. BARGAIN PRICE, $95.00 each.
5 ARROW 2½ H.P. single cylinder, two-cycle Motors, same equipment, including Bosch high tension magneto. BARGAIN PRICE, $90.00 each.
1 ARROW 5 H.P. two-cylinder, two-cycle Motors. Same equipment, including Bosch high tension magneto. BARGAIN PRICE, $125.00.
These Motors are brand new, have never been used, just exactly as shipped to us by the manufacturers.

MULLINS BODY CORPORATION,
Boat Department, Salem, Ohio.

Advertising Index will be found on page 114

FOR SALE AT A BARGAIN ORLO II

Orlo II is a 36′ x 7′ Mahogany Sea Sled runabout, one of the finest and fastest boats ever built. In perfect condition, both hull and power plant as good as new, and ready for immediate delivery in New York. A great bargain for anyone who is looking for a racing boat, yacht tender, fast ferry, sightseeing passenger boat, etc.

Special Price for Quick Sale $10,000 (less than one-fifth its original cost)

Guaranteed speed 40 miles per hour. In 1921 made three world's records for displacement boats in the Fisher-Allison Trophy Races at Miami, Fla. One record was for 47 miles per hour, officially certified to by the American Power Boat Association.

Passenger capacity at high speed, 20 persons. This craft is famous for its roominess and weight carrying ability. Orlo's tremendous speed, great capacity, staunch construction, seaworthiness and shallow draft make it practical for more kinds of service than any other 40 mile boat. A boat that will safely ride any sea and go anywhere regardless of shallows, weeds, etc.

Power plant, two 200 H.P. 6-cylinder Sterling Motors in perfect condition.

30 MILE CRUISER, ORLO IV FOR SALE

Orlo IV is a 58′ x 10′ V-bottom express cruiser originally designed for naval auxiliary service. Unusually staunch construction makes it safe to put to sea in any weather. Guaranteed speed of 30 real miles an hour insures a thrill every minute you are out. (Actual speed, 33 to 35 m.p.h.)

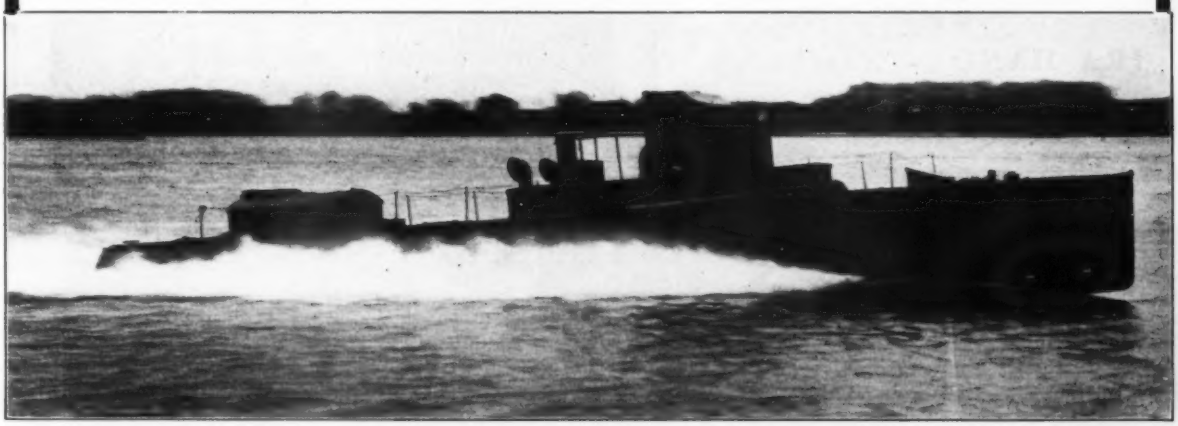
Recently repowered with two 310 H.P. Murray & Tregurtha engines, tested and inspected at the factory and pronounced in perfect condition.

The price asked for Orlo IV is little more than the value of the motors alone. Ready for immediate use in pleasure or high speed commercial service. For a reasonable amount can be refinished as a high class yacht which could not be duplicated under $50,000.

Write or wire me today for full details if you are interested in either of the above boats

GEORGE LEARY, Jr.

17 State Street, New York, N. Y.



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Classified advertisements set entirely in small light face type. No extra charge for capitals. Bold face type used at display rate, $12 per inch, single column.

CUBAN ISLAND
Exchange.....or.....For Sale
10,000 Acres
Center of great Asphalt Deposits of Cuba 93 miles from Key West, Fla. Deep water. Thoroughly protected from storms. Low price.

CHARTER PARTIES
We also have Yachts for Charter, Sale or Exchange. Enjoy the season at Miami, Florida. Snare & Co., 34 N. Bay Shore Drive, Miami, Fla. Yacht Brokers & Estate Agents.

FOR EXCHANGE: Will exchange for Yacht, undeveloped Orange Grove of 20 acres, 10 miles from Orlanda, Florida. Reason for disposing of same owner has other interests on coast. J.A.Kirkmyer, 1301 W.Broad St., Richmond, Va.

For Sale—Power cruiser 47 ft. x 12 ft. x 3 ft. 9 in. Built August, 1920. Speed 12 M.P.H. 4 cyl. Sterling engine. Separate electric lighting plant. Mahogany finish below and on deck. 3 toilets. Crew's quarters sleeps two. Owner's quarters, two staterooms and main saloon, sleeps seven. Bridge deck control. Engine room in separate compartment under. In A1 shape, fully found and now in commission. For further particulars address MoToR BoatinG, Box 35.

For Sale: 300 H.P. 6 cylinder Model F Sterling Marine engine.....$4500.00
60 H.P. 6 cylinder Auto Marine Eastern Standard with air starter.....$1000.00
ARTHUR DUVIC'S SONS, New Orleans, La.

For Sale—New and rebuilt marine engines. Write for list of bargains. Anderson Engine Co., 4032 No. Rockwell St., Chicago, Ill.

A few pair of very powerful and clear Bausch & Lomb Prism Binoculars, 6 x 30 power, complete with case, etc. Worth $75.00, will take $40.00. Percy M. Child, 1110 14th St., N. W., Washington, D. C.

FREE Illustrated Literatures. Outboards, New and Rebuilt Engines. Universal Joints, Pumps, Clutches, Gears, Hyde's, Gordon Reversible Propellers, etc. Canadian Boat & Engine Exchange, Toronto.

Hull: 21x20x5x2. All piano finish mahogany. Finest construction and condition. Cost $2,600. Price $600. Ford, 41 East 42 St., N. Y. C.

FOR SALE—2—Speedway, 4 cyl. 4 cycle motors of 50 H.P. each. Bore 6". Stroke 6". In perfect condition, complete with reverse gears and couplings, one right hand and one left hand. Will sell separately at $400.00 each or both at $700.00. RED BANK YACHT WORKS, RED BANK, N. J.

Four cyl. 4 cycle, 20 H.P. Kermath, rear starter, high tension magneto, standard reverse gear, Hyde three blade wheel, new this season, A-1 condition, $275.
G. P. Case, 710 Ann St., Parkersburg, W. Va.

For Sale Cheap—14 foot Luders built yacht tender equipped with Single Cylinder Palmer Engine. Both magneto and battery regulation. Electric starter. Practically new. Used 3 months as tender for yacht Ginger-Dot. Reason for selling owner getting larger launch.
F. S. Nock, East Greenwich, Rhode Island.

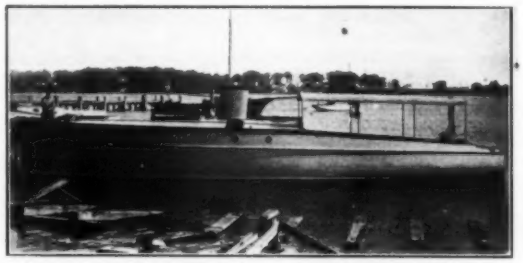
75-80 H.P. WINTON 6½'x9'. A BARGAIN. A. EARDLEY, 153 WEST 15th ST., N. Y. C.

18th ANNUAL NATIONAL
MOTOR BOAT SHOW
AUSPICES NATIONAL ASS'N ENGINE AND BOAT MFRS., Inc.

Grand Central Palace
New York
Feb. 21st—Mar. 3rd, 1923

For Space, Information, etc.
Apply to

IRA HAND - *Secretary*
29 WEST 39th ST., NEW YORK



For Sale—A "high stepper" 46' x 8'6" x 2'6", beautiful, and built of the finest, by day labor. Brand new, just off trials, speed up to 30 miles. All spaces large; galley, main saloon, engine room, toilet room and hanging spaces. New 300 h.p. Murray & Tregurtha Motor. Consumption extremely low. Inside, mahogany and white enamel—outside light gray and mahogany. Wonderful sea-boat. Just the craft for a luxurious trip South at moderate expense. Price for quick sale, complete ready to cast off, $12,500. Delivery in New York can be arranged. Demonstration at our plant. Baker Yacht Basin, Inc., Quincy, Mass.

Honestly Rebuilt

Don't buy any motor until you have our latest price list of Masters Rebuilt Motors. Thoroughly overhauled, all worn parts replaced, refinished and guaranteed like new. All sizes. Lowest prices. Write to-day.

W. L. MASTERS & CO.
Largest Engine Dealers in Central West
231 No. State St. Chicago, Ill.
AUTHORIZED DISTRIBUTORS FOR
STERLING KERMATH UNIVERSAL FRISBIE
STEARNS EVINRUDE JOHNSON
HYDE PROPELLERS JOES REVERSE GEARS

WE ALL LEARN BY EXPERIENCE

OUR EXPERIENCE: The oldest marine engine rebuilders in this country and today the largest in the business.

YOUR EXPERIENCE: You deal with an old established, reliable and well-rated company. The first to guarantee their rebuilt engines.

That Absolute Guarantee is Your Protection. *Send for our Bargain List*

BRUNS, KIMBALL & CO.
153-155-157-159 West 15th Street NEW YORK CITY

Advertising Index will be found on page 114

If We deserve it

AUTHORIZED DISTRIBUTORS
for

Niagara
Hall-Scott
Wright Reliable
Automatic
Scripps
Gray
Brennan
Sturdy
Universal 2 to 25 K. W.
Electric Plants
Hyde and Sterling Propellers

This seal is attached to every Rebuilt engine shipped

WE want your business if we deserve it—if we can earn it on the level. We start in to earn it when we buy Marine Engines from the makers. We buy only from the known leaders—and we are not tied up by any contracts. Every new engine delivered is guaranteed—to you—by the Marine Engine Company of Philadelphia, we do not pass the buck. Look to us to treat you right. We protect you first and then fight it out with the manufacturer. That's earning your confidence isn't it?

Every one of our rebuilt engines carries our guarantee, backed by my Personal Surety Bond for the full purchase price. And "rebuilt" means 100 per cent Rebuilt here—completely disassembled from spark plugs to base. Worn or broken parts replaced. Final assembly inspected, tested and run in under load. Then repainted and polished for shipment. The motor that can't stand all this is junked—because we do not sell "as is."

If that sounds right to you, write to us about engines.

My word is good.
D. C. MacNeill
Treasurer

Turn in your old engine as part payment on a new one
Red list of special offers for January mailed on request

MARINE ENGINE CO

MACHINERY EXHIBIT of PHILADELPHIA BOURSE BUILDING

Now Is The Time To Start

Get Your Spring Varnishing and Refinishing Under Way While There Is Plenty of Time for Careful Workmanship

Contributed by a Yachtsman

YEAR after year it happens. The first warm days of March and April start yachtsmen to thinking about their boats and all of the work that must be accomplished before they are ready to go into commission. Orders for work begin to pile up—mostly rush orders—and every yard is pushed to the limit of its capacity. Every expert boat craftsman is employed full time and over time to do things which could and should have been done before.

If such rush orders were the exception little harm would result. But yachtsmen are peculiarly alike in this respect. Perhaps they think it doesn't matter because they are willing to pay for overtime; but that isn't the whole story. Some things can't be rushed.

Refinishing the spars of a fine yacht calls for the same kind of workmanship as finishing a piano. It takes time. You may rush a workman but you cannot rush varnish in its drying. You cannot expect the same durability and perfection of finish or the same painstaking workmanship if speed instead of quality is the aim.

In the springtime weather is fickle. Damp weather or rain may ruin a wet coat of varnish and utterly waste the time spent in applying it. How much better it is to start the work early in the year, remove all the spars and bright work to a heated building and proceed with the work in the careful way it should be done.

The only way to get a good looking varnish job is to allow each coat to dry thoroughly and harden for at least ten days between coats. This will give a finish that will last all summer because the first coat will still remain to protect the light color of the wood after the top coats have been destroyed by weather and wear. If a second coat is put on before the first is thoroughly dry, the undercoat will never harden properly and unequal expansion of the several coats will quickly check and dull the varnish.

It's the same with motor work and overhauling. Plenty of time means plenty of care and attention to each detail. Particular repairs of particular troubles may be rushed through but when it's a case of putting the motor in shape after a hard season of service, every part and detail should have individual attention.

Shipyards keep their organizations together through the dull winter months by devoting extreme care to the work in hand. There is plenty of time to do things right and it is inevitable that the results of such careful work are more satisfactory, more durable and cheaper in the end, than last minute work.

It's a great satisfaction to have your boat all ready to go overboard any time you please in the early spring. The outdoor work of painting the underbody and topsides may be done at the last minute with undivided attention. These paints do not require as much time to dry and harden.

So it pays to have the little jobs all done —then nothing is overlooked. Now is the time to start.

* * * * *

The HOUSE of WOOD offers these suggestions so that your 1923 fitting-out may be more satisfactory than ever before. We have enlarged our yard and our organization and have better facilities than ever to take care of your work. We will be glad to handle your last minute rush work too, but we hope you will accept this suggestion and order us to proceed with your work at once.

Write us for quotations or come up and look over our plant. The HOUSE of WOOD, Marine Street, City Island, New York City.

"The HOUSE of WOOD"

—Adv.

Advertising Index will be found on page 114

NAVAL ARCHITECTS & YACHT BROKERS

Thomas D. Bowes, M. E.
NAVAL ARCHITECT AND ENGINEER
Offices:
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HAND-V-BOTTOM DESIGNS
Every design, now as always, my personal work.
Send stamp for catalog illustrating forty-three typical Hand-V-Bottom designs.

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FREDERIC S. NOCK
NAVAL ARCHITECT
Yacht Builder, Marine Railways, Storage and Repairs
East Greenwich, Rhode Island, U. S. A.

Yard and Shop

(*Continued from page* 38)

bill was designed by Mr. Fish, while the design for Domino was patterned after it by another designer. More complete illustrations of these boats will be published in a later issue.

A New Two Cycle Engine

A sturdy little two cycle engine has been completed by the Dutcher Machine Company of Fulton, New York, and is being built in one and two cylinder units under the name of the New Parker engine. It is a compact little unit and develops two horse power in a single cylinder size and four horse power in a double cylinder size. The bore and stroke is three inches both ways and the machine operates on the three port principle. All parts are accurately made and interchangeable.

International Stock Cruisers to Be Built Again

F. M. Hartman, President of the International Shipbuilding Corporation at Nyack, New York, was in to see us not long ago and announced that he is preparing to resume the building of the 32-foot stock cruisers which were so popular a year or two ago. Labor difficulties at that time made it prohibitive to attempt the production of boats in quantities at any kind of a normal price. Recent developments have so changed the situation that next summer will again see these boats in quantity production.

Fast Boats Prove Popular in Novel Contest

If anyone requires proof of the fact that of all sports, boating is the most popular when it is to be had, then the results of the contest being held by the *Boston Post* will offer that proof.

This newspaper has conducted a series of contests from which one winner was to be selected each day, the entire contest being held under the name Millionaire for a Day Contest. Each winner is allowed to select any recreation he cared for that can be obtained in one day and the *Boston Post* agrees to play host for each winner in giving that winner his one day's recreation.

Some of the wishes are as might be expected. Most every winner selects as part of his recreation dinners at the best hotels, theatre parties, etc. The startling proof of the popularity of motor boating, though, is shown by the fact that of the first three winners, two of them selected as their ideal recreation, to spend the major part of their day in a trip on a Sea Sled.

The winner of the first day's contest was Mrs. Alice H. Pewsey of Medford, Mass. After learning that she had written the winning answer to question No. 1, Mrs. Pawsey invited her husband to accompany her experiences as a millionaire for a day. She stated that her choice was a ride in a fast Sea Sled.

The winner of the third days contest was George E. Smith, Quincy Point, Mass., and, quoting from the *Boston Post* of November 16, Mr. Smith's ideas are as follows: "A trip down the harbor, skimming over the water at the rate of 40 or 50 miles an hour with the sweetest girl in the world at his side is Mr. Smith's idea of a millionaire getting up an appetite for lunch."

Further, in the same story of Mr. Smith's selection in the newspaper mentioned, he says thus, "You can't get a Sea Sled trip every day in the year. I thought it wise to take one when I could get it.

Promptly upon learning of the request of these winners, the Sea Sled Company placed at the disposal of the *Boston Post* their large 40-foot Atlantic City model and arrangements were made so that these two parties could be motored to West Mystic, Conn., so that they might realize their ideal recreation.

The sport of boating in itself is to be complimented when persons outside of its own ranks select rides in Sea Sleds above all other forms of recreation.

New subscriptions to MoToR BoatinG are entered as promptly as possible, but under certain conditions it may take four weeks for the first copy to reach the subscriber. Subscriptions should be renewed on or before the date the last copy of the old subscription is received in order to make sure the subscribers will not miss an issue. When sending a change of address, the old address must be given as well as the new, and five weeks must be allowed for the first copy to reach the new address.

RALPH E. WINSLOW
Naval Architect
River Street, ATLANTIC, MASS.
Designer of high grade wood and steel, Steam, Motor, Auxiliary and Sailing Yachts and Commercial Vessels.
18 years' experience. Stock plans.
Phone Granite, Mass., 1011 or 2599-M

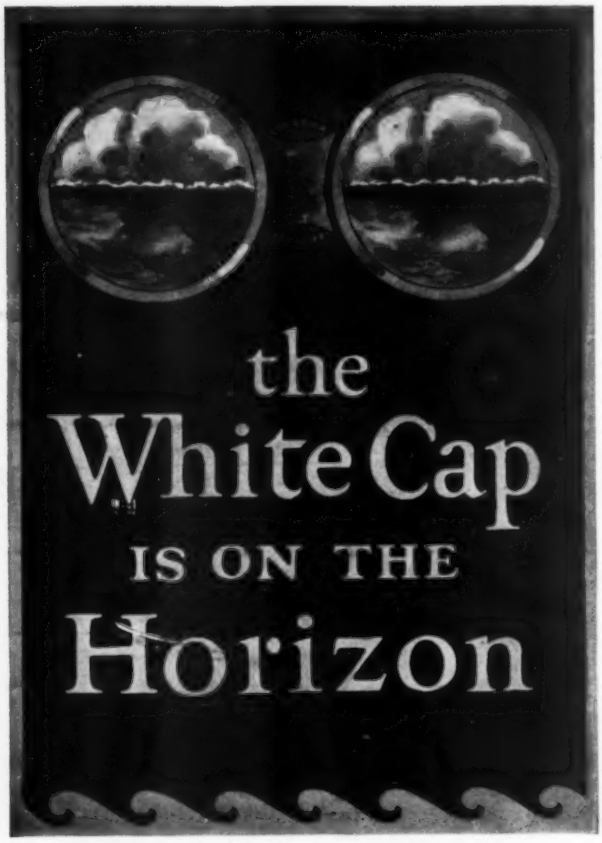
Ideal Series Volume VI Now Ready

The first copies of MoToR BoatinG's new book of charts have been received from the printer and are ready to be distributed among the motor boatmen of the country. The title of this book is "Where to Cruise" and it comprises Volume VI of MoToR BoatinG's Ideal Series. The handy reference charts for motor boatmen which has been a feature of this magazine for several years have all been compiled into a single volume which contains the entire series from No. 1 through to No. 38. In addition, much valuable information has been included in this book, making it one of the most useful in the collection of the cruising yachtsmen. The price of this book will be the same as the other volumes of the Ideal Series, that is $2.00 each. Should several volumes of this series be desired, a special rate will apply. These charts will still be available in handy loose leaf form for insertion in the standard three ring binders, which have proven so popular.

A Positive Action Reverse Gear

The little reverse gear which is made by the Caille Perfection Motor Company of Detroit, is a very substantial little machine. It has a range of from 2 to 16 h.p. and is produced in two different models. This gear is somewhat better than the common variety of reverse gears and is exceptionally well built. It has positive forward, reverse, and neutral positions and the gears shift easily and smoothly into position. It is entirely enclosed and does not throw grease about the boat. Adjustments are quickly made by the simple process of tightening two screws, no others are necessary.

(*Continued on page* 66)



"The CAPITOL"

MARINE UNIT POWER PLANT

COMPLETELY ENCLOSED — COMPLETELY EQUIPPED

IF you own or are planning the kind of runabout or cruiser that deserves a really excellent power plant, you should know more about the Capitol.

There isn't a smoother, quieter running marine engine. Vibration and noise are eliminated by perfect balance, wide-faced helical-cut timing gears, force feed lubrication, ball bearing universal joint, three point suspension, and many other improvements.

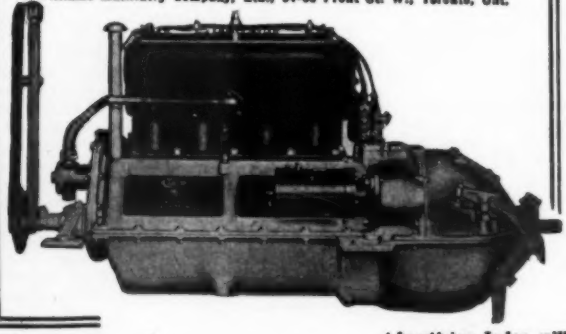
Delco Ignition, Atwater-Kent two-unit starting, lighting and generating system, Willard storage battery, Stromberg or Schebler carbureter, instrument plate and all other necessary equipments of highest grade.

Bore 4¼ in. Stroke 5½ in.

High Speed Model 60-65 H. P. at 2000 R. P. M.
Medium Speed Model 30-34 H. P. at 1600 R. P. M.
Write today for complete description and prices

AUTO ENGINE WORKS, St. Paul, Minn., U. S. A.

Eastern Representatives: Ventner Boat Works, Atlantic City, N. J.; Fred C. Duelon, Alexandria Bay, Jefferson Co., N. Y.; Gray-Aldrich Company, Inc., 84 Atlantic Ave., Boston, Mass. Canada: The A. R. Williams Machinery Company, Ltd., 64-66 Front St. W., Toronto, Ont.



Working A Dead Reckoning Traverse

(*Continued from page 29*)

The errors of this card have been somewhat exaggerated, and are more than would be expected on an adjusted compass.

Let us now work an example. We shall include all the elements of compass correction, leeway, current, etc., and finish the dose at a gulp, even though the problem be somewhat complicated and fanciful.

DEVIATION CARD		STEERING CARD	
Ship's head by compass	Deviation	To make correct magnetic	Steer
0	14.0 W	0	11 W
20	8.0 W	20	6 W
40	2.5 W	40	2 W
60	2.0 E	60	2 E
80	6.0 E	80	5 E
100	8.0 E	100	7 E
120	10.0 E	120	8.5 E
140	11.5 E	140	10 E
160	12.5 E	160	12 E
180	14.0 E	180	13 E
200	13.0 E	200	14 E
220	10.0 E	220	12 E
240	4.5 E	240	6 E
260	3.0 W	260	5 W
280	10.5 W	280	15 W
300	15.5 W	300	19 W
320	19.0 W	320	18 W
340	18.0 W	340	15 W

Fig 37 Form of compass correction card.

Example 62: Vessel on patrol duty off New Jersey coast, proceeding on CC 178°, obtains fix by bearings on Sea Girt Light as follows: 1st bearing per standard compass, 224°, pat. log. 10.8; 2nd bearing, per s. c., 278°, pat. log. 16. Thence the log book shows the following:

Hrs.	Distance		CC	Wind		Leeway	Remarks
	K	10ths		Dir.	Force		
A.M.							
9	16	3	140°	SW	4	2	
P.M.							
2:30	64	7	60°	SW	5		
9:15	18	2	91°	N x E	4	2	
11	36	4	180°	N x E	6		
12	46	2	180°	N x E	6		

(*See traverse on page 54*)

From 8 to 12 P. M., vessel probably in current setting NExE, drift 1½ knots. At midnight receives radio message to proceed to position 5 miles East of Five Fathom Bank Lightship. Find Lat. and Long. in at time of receipt of message, and compass course and distance to Lightship.

Sea Girt Lt, per Light List, Lat. 40° 08′ .2 N, Long 74° 01′ .7 W
Five F Bk, per Light List, Lat. 38° 47′ .3 N, Long 74° 34′ .6 W
Dep. 5 mi. East, in Lat. 39° N, = D Lo 6′ .4 E
Lo to 74° 28′ .2 W

Sea Girt, L 40° 08′ .2 N
DL 11′ .3 S
L in 39° 56′ .9 N
Mid L = 40

Table 2, p. 610, Mid L 40°, Dep 100.7 = D Lo 131′ .2 = 2° 11′ .2 E
Sea Girt, Lo 74° 01′ .7 W
D Lo 2° 11′ .2 E
Lo in 71° 50′ .5 W

L in 39° 56′ .9 N,
L to 38° 47′ .3 N,
D L 1° 9′ .6 S
= 69′ .6 S

Lo in 71° 50′ .5 W
Lo to 74° 28′ .2 W
D Lo 2° 37′ .7 W
= 157′ .7 W

Mid L = 38° ½
Table 2, Mid L 38°, D Lo 157′ .7 = Dep 124.3
Mid L 39°, = Dep 122.6
Mid L 38° ½ = Dep 123.5
Table 2, p. 588, DL, 69′, .6 S. Dep 123.5 W = C 241° Dist 141.5
TC 241° + Var 12° W = Mag C 253° + Dev 5 W = CC 258°.

Explanation:

1. *The departure.* The difference between the CC and the first bearing is 46°; between the CC and the second bearing, is

(*Continued on page 54*)

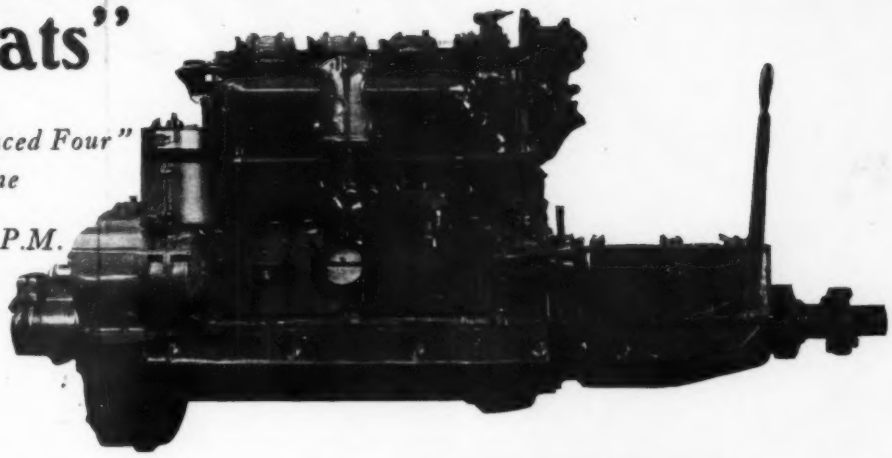
Advertising Index will be found on page 114

"Fine Motors Make Fine Boats"

The Hall-Scott "Balanced Four" Marine Engine

125 *H.P.* 1700 *R.P.M.*

Weight, 1100 *pounds*



HALL-SCOTT
MARINE MOTORS

HALL-SCOTT Marine Motors are manufactured for fine runabouts and fast cruisers which require fast-turning engines of extraordinary efficiency and dependability.

Such boats are rapidly gaining in popular favor as yachtsmen discover they can get a high duty power plant giving the same reliability as ordinary engines give in ordinary boats.

Hall-Scott efficiency is the logical result of the ability and care devoted to the design and production of these engines.

OUR engineering staff is known throughout the world for its attainments in the development of internal combustion engines.

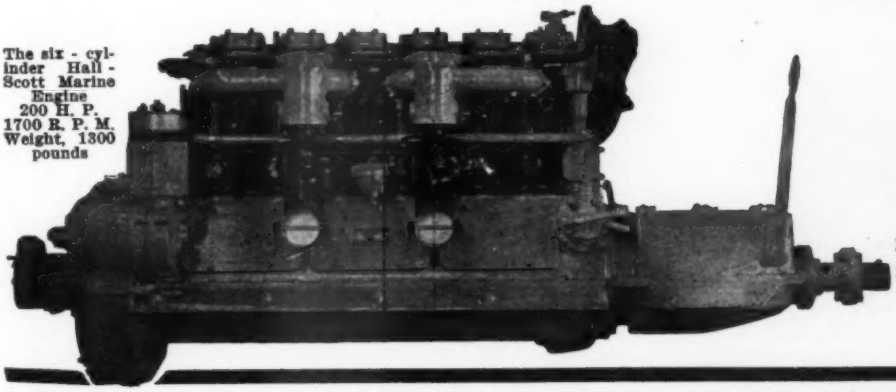
Their plans are carried out in a factory having every facility for fine workmanship, the tool equipment alone costing nearly a million dollars.

Every branch of manufacturing and metallurgical science has been explored for improvements in methods and materials for Hall-Scott engines.

IF you have a fine boat, or plan to build one, we want to tell you more about how Hall-Scott Marine Engines are made, and what they are doing in typical installations.

You take no chance when you buy a Hall-Scott—we can give you accurate details of Hall-Scott performances in boats similar to yours.

Write today for descriptive catalogs



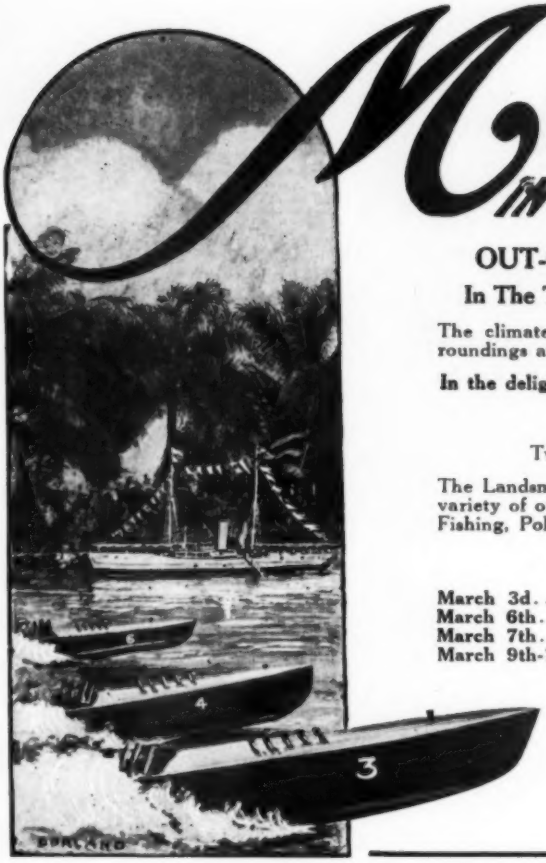
The six-cylinder Hall-Scott Marine Engine 200 H. P. 1700 R. P. M. Weight, 1300 pounds

Single and Twin Screw Plants in stock at

Hall-Scott
Motor-Car Co., Inc.

Eastern Sales and Service Branch
887 Niagara St., Buffalo, N. Y.

Factory: Berkeley, California.



Miami
IN THE TROPICAL ZONE OF FLORIDA

OUT-O'-DOORS—THE YACHTSMAN'S LIFE

In The Tropical Waters of This Summerlike Wonderland.

The climate, the most equable in the world, is superb and the surroundings and associations leave nothing to be anticipated.

In the delightful anchorage in Biscayne Bay, the Yachtsman can enjoy Entrancing Selections by

ARTHUR PRYOR'S FAMOUS BAND
Twice daily in Royal Palm Park, Dec. 12 to April 2

The Landsman, too, has equal opportunity for enjoyment in the wide variety of outdoor sport and entertainment—Surf Bathing, Golf, Tennis, Fishing, Polo, Aviation, Motoring, Dancing, etc.

MIAMA MOTOR BOAT REGATTA

March 3d.....Long distance race; Miami Beach to Havana
March 6th.....Cruiser race; Havana to Key West
March 7th.....Cruiser race; Key West to Miami
March 9th-10th.....Runabout and cruiser races on Biscayne Bay

75 Hotels—150 Apartment Houses
Five thousand Cottages for rent furnished
Write for handsome booklet with full information

MIAMI CHAMBER OF COMMERCE
Miami, Florida

Working a Dead Reckoning Traverse

(*Continued from page* 52)

100°. Bowd. Table 5B (p. 635) 46° column, opposite 100, gives constant of .89 × 5.2 (the distance run) = 4.6 off at second bearing. (See Bowd. p. 59 for explanation of Table 5B.) In this portion of the problem, the compass is merely used *to measure angles,* and Dev and Var need *not* be applied. Thus, we are 4.6 off the Light on bearing 278°. To get *position* on this bearing, Dev and Var *must be* applied. But the ship is *headed* on CC 178°, and Dev for *that heading* must be taken, i. e., 14° E per Dev card. Var from chart is 10° W. Total error, 4° E. True bearing 282°, which *reversed* is 102°. Thus departure entry becomes Course 102°, Dist 4.6.

2. *The several courses sailed.* These require but little explanation. The distances are those recorded by the patent log for each course. The log in question is assumed to register up to 100 and then to repeat. Thus, the reading of 64.7 is followed by 18.2, which really is 118.2. The deviation is taken from the compass card (Fig. 37), the variation from the chart. It will be remembered that variation may change with position. Thus, the courses and distances made good must, from time to time, be referred to the chart, so that the variation may be taken for the true position.

3. *Leeway.* The leeway, where given, is roughly estimated. On the first course, the vessel sails CC 140° with the wind coming from the SW, and is thus on the starboard tack. The leeway has the same effect as westerly error. On the third course, she sails CC 91°, with the wind N x E, and is on the port tack. On the second and fourth courses, the wind is so nearly aft that it would probably cause little or no side slip through the water. But the wind is strong, 5 and 6 on the Beaufort scale (see Bowd. p. 33), and there would doubtless be a fairly heavy following sea. The vessel would probably underlog, perhaps to the extent of several miles. She carried this afterly wind and sea 6¼ hrs. on CC 60°, and 1 hr. on CC 180°. It would be pure guesswork to estimate such an allowance on a paper problem, and it has been omitted. In practice, the navigator might make an allowance based on judgment and experience. From the data given, the ship should be somewhat to the north and east of the position shown by the traverse.

4. *Current.* The vessel is 4 hrs. in a current setting NE x E, drift 1½ knots. The effect is equivalent to a course of NE x E, Dist 1½ × 4 = 6 miles.

5. *The run to Five Fathom Lightship.* The true course is readily computed by methods heretofore explained. But the matter of sailing it is not so simple. The variation at Lat. 39° 57′ N, Long. 71° 50′ W, is 12° W. But on the run to the Lightship, it decreases a degree about every 38 miles. At the Light-

TRAVERSE

CC	Dev.	Var.	Leeway	Total Error	True C	Distance	N	S	E	W
178°	14° E	10° W		4° E	102°	4.6		0.9	4.5	
140°	12° E	10° W	2° W	0	140°	48.4		37.1	31.1	
60°	2° E	10° W		8° W	52°	53.5	32.9		42.2	
91°	7° E	11° W	2° E	2° W	89°	18.2	0.3		18.2	
180°	14° E	12° W		2° E	182°	9.8		9.8		0.3
Current					NE x E	6	3.3		5.0	
							36.5	47.8	101.0	0.3
								36.5	0.3	
								11.3	100.7	

(*Continued on page* 64)

The Winter Rendezvous—Miami Beach

MIAMI BEACH is undeniably the favorite rendezvous of yachtsmen and boat lovers during the winter season. Here it is summer the year around, with the sunny days of a northern June throughout the winter months.

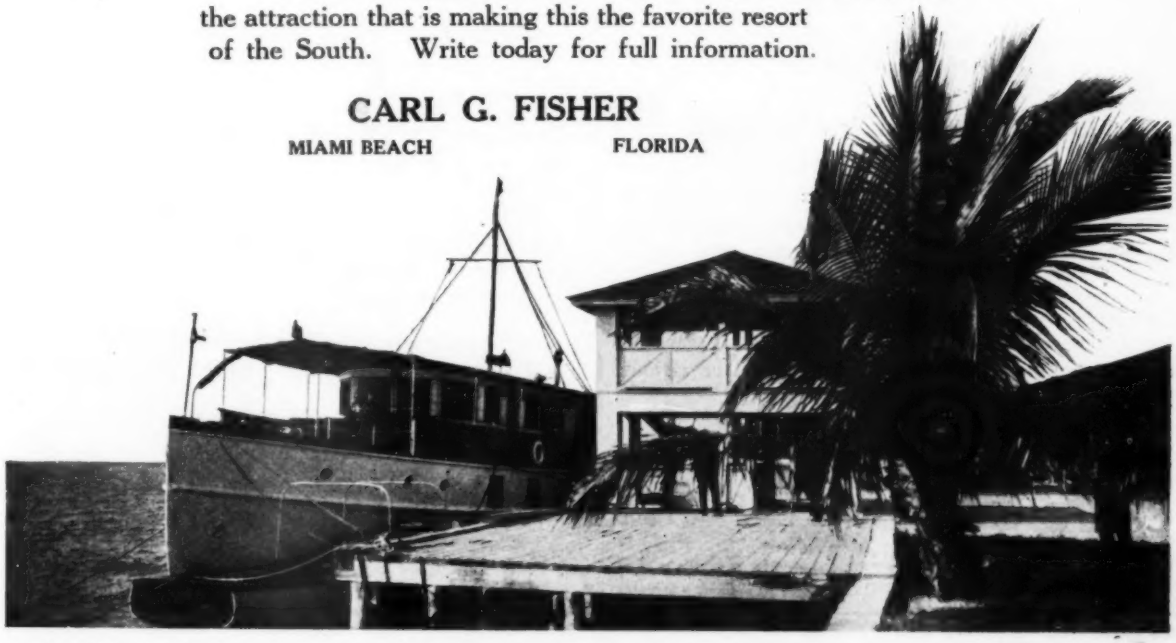
Outdoor life is always enjoyed at its best—never too warm and never too cool for boating, bathing, fishing, polo, tennis, golf or motoring. Variety of entertainment and recreation is Miami Beach's charm.

Permanent homes are multiplying rapidly as Northern visitors become enamored of the wonderful climate and surroundings of Miami Beach. The residence property has been scientifically developed and you can have a home erected under expert supervision or buy a new house already built.

Come to Miami Beach this season and you will understand the attraction that is making this the favorite resort of the South. Write today for full information.

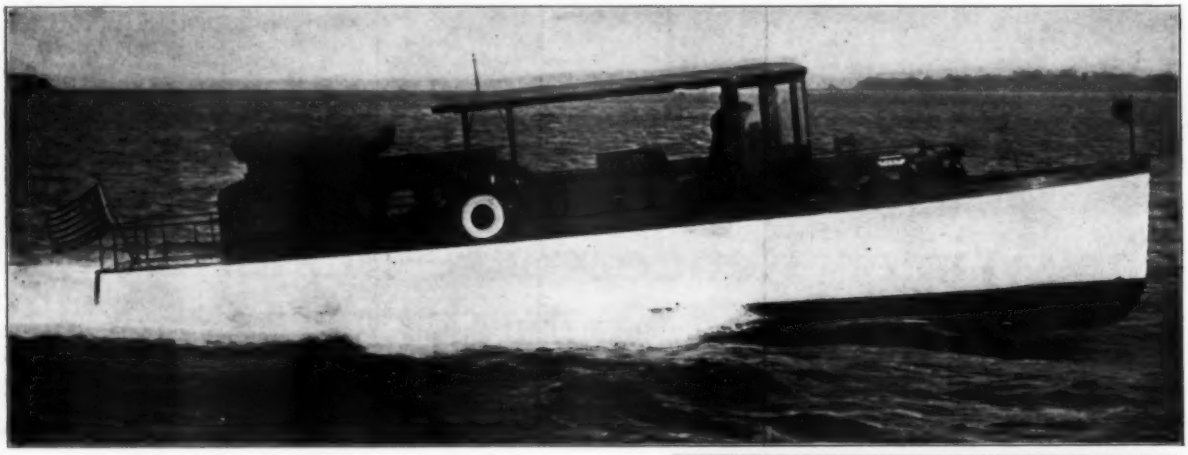
CARL G. FISHER

MIAMI BEACH FLORIDA



THE "Gar Jr. Flyer"

A New Standardized Guaranteed 30-Mile Commuter



High Speed—Seaworthy
Dependable—Low Cost
Economical Operation

NEW YORK	Foot of East Twenty-Third Street	to GREENWICH	55 Minutes
		" GLEN COVE	44 "
		" PORT WASHINGTON	42 "
		" OYSTER BAY	55 "
		" LARCHMONT	40 "
		" GREAT NECK	26 "
		" SOUTHAMPTON	4 Hours

The roomy bridge with four individual seats, also large thwartship seat directly aft of steersman. There is also a forward cockpit seating three persons and good-sized after deck.

Prompt Delivery

Now Available for Thorough Demonstration

Built By:—GAR WOOD, DETROIT, MICH.
Exclusive Sales Agents:—COX & STEVENS, NEW YORK

A 50-ft. twin screw motor yacht with sustained high speed, free of vibration, and remarkable seagoing qualities (as demonstrated by GAR JR. II in various long distance ocean races).

The hull construction is of highest grade (double planking—outer skin of mahogany). Fittings and furnishings of the best.

Power plant consists of two twin-six "Liberty" motors developing 450 H.P. each, perfect in balance and control, absolutely reliable, and practically automatic in operation.

A trained engineer will be furnished with each boat, and a guarantee from the builder as to speed and handling qualities.

For price, plans and full particulars, apply to

COX & STEVENS — 25 Broadway, New York City

Telephone: WHITEHALL 2700

Advertising Index will be found on page 114

Fastest and Most Successful Standardized Runabout Built

Own a Sure Winner—Baby Gar

50 Miles Guaranteed

$8250 Tax Paid

Powered with a 450 H. P. Liberty Marine Motor. (1550 cu. in.) Speed guaranteed on 50 mile trial.

45 Miles Guaranteed

$7250 Tax Paid

Powered with Detroit Marine-Aero Engine (Fiat type), 300 H. P. (1350 cu. in.). Speed guaranteed on 50 mile trial.

NOT only is Baby Gar the World's Fastest Standardized Runabout but several duplicates of the original Baby Gar showed the *versatility* of this design with different power plants by winning the most important races of the past season. They also showed its *safety* and *seaworthiness* by making high speeds in rough weather which forced other contestants out of the running.

However, Baby Gar is not merely a racing creation, but is a sensible, substantial and practical runabout for general use. Seating eight persons and as easy to control at any speed as a motor car on a concrete highway, this 33-ft. boat affords the wonderful exhilaration of high speed on the water without sacrificing safety, seaworthiness or practical serviceability.

Furnished complete, fully equipped and ready to run. Thoroughly guaranteed in workmanship, equipment and performance.

Write today for full details and delivery dates. Attractive proposition for dealers.

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Offices: 7960 Riopelle St., Detroit, Mich. Boat Building Plant, Algonac, Mich.

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Chicago Territory Representative, Webb Jay, Standard Oil Bldg., Chicago, Ill.

Baby Gar

First and Second Place
Fisher-Allison Trophy Race, Hamilton, Ont.
First and Second Place
Wood-Fisher Trophy Race, Detroit.
First Place
2200 cu. in. Displacement Boat Class, Buffalo.

Erico Universal Shaft Log
100% True Alignment

Not only the angle, but the point of bearing is readily adjustable. Specified and used by leading designers and builders.

HUBBARD H. ERICKSON & CO.
3037 to 3045 N. Western Ave., Chicago

The Special Equipment for the HACKER DESIGN RUNABOUT SHOWN IN THIS ISSUE Is Manufactured By Us.

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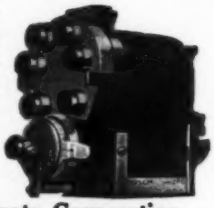
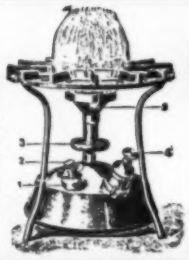
Trade Mark

This trade mark on a starting, lighting or ignition unit or part stamps it as a genuine Bosch Product — backed by the Bosch guarantee of dependable service.



American Bosch Magneto Corporation
Springfield, Mass., U. S. A.

ZUNDEL



Genuine JUWEL Kerosene Oil Gas Stoves in stock. The original Juwel Stove made by G. Barthel, Germany. The stove has always been in great demand due to its extreme efficiency, simplicity and excellence of manufacture. Brass fount holds 1 quart; has detachable uprights. Price $4.50.

Blood Universal Joint saves power; prevents shaft and bearing troubles. All sizes in stock up to 1⅛ in. inclusive.
Price, $15.40
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Electric Searchlights
ARC OR INCANDESCENT

A Searchlight for any purpose. Arc Searchlights for 110 volts. Incandescent Searchlights for low voltage. In sizes from 7 inch to 60 inch. High efficiency. Moderate price. Special glass mirror. Sturdy cast bronze fittings.

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THE CARLISLE & FINCH COMPANY
261 East Clifton Avenue
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Electrically Propelled Non-Sinkable Cruiser
"LIGHTNIN"
READY NOW FOR IMMEDIATE DELIVERY
Write for Information
WILLIAM T. DONNELLY
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for Florida

BELLE ISLE BEARCAT

The Belle Isle Bearcat is the finest runabout of its class that you can select for the Florida season. It is equipped with a Hall-Scott Marine Motor whose cast iron cylinders are impervious to injury by salt water.

Demonstrations at various points along the coast throughout the boating season. Write for information regarding representation at Miami.

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More Speed Guaranteed

Let us increase your boat speed with a

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We are so sure that the celebrated B & B Propeller will make your boat go faster that we positively guarantee it to increase your speed from one to three miles per hour.

Excellent materials and workmanship together with scientific design is the reason for the wonderful efficiency of B & B Propellers. They are different.

Any size and pitch up to 30" dia. in stock.

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A Gentleman's Cruiser
28 ft. long

Designed by a competent architect, constructed by master boat builders and finished throughout like a high grade yacht. The GRAY BOAT is everything you could desire in a cruiser of its size. Beauty, comfort, pleasure, safety, convenience, roomy accommodations and class. Sleeps four inside, full headroom, light ventilated cabin separated from motor, toilet, folding basin, galley, stove, refrigerator, ample locker space, large cockpit. Absolutely complete cruising equipment.

De Luxe Model, mahogany finish, brass fittings. Practical Man's Model, oak finish, galvanized fittings. Powered with Fay & Bowen LN-41, 16 H.P., Speed 9-10 miles per hour. Powered with Fay & Bowen LN-42, 30 H.P., Speed 11-12 miles per hour.

Write for prices

GRAY BOATS, Thomaston, Maine, U.S.A.

Advertising Index will be found on page 114

PURDY BOAT COMPANY

Designers and Builders of

EXPRESS CRUISERS

TRENTON **MICHIGAN**

YACHTS -- CRUISERS -- HOUSE BOATS

Experience Teaches—Hence the reason that once an owner of a New York Yacht Launch and Engine Craft always an owner. Many years' experience in high class Yacht Design and Construction are at your service.

20th CENTURY MOTORS

400 to 500 R. P. M.
Heavy Duty Type
Four cycle. Bore 6½",
Stroke 8"

2 cyl. 15-20 B. H. P.
4 cyl. 40-50 B. H. P.
6 cyl. 65-75 B. H. P.

NEW YORK YACHT LAUNCH & ENGINE CO., Morris Heights, New York City

Don't Miss the SPECIAL Show Issue

MoToR BoatinG will publish a special extra issue covering the Motor Boat Show exclusively. This will be out Feb. 21st at the opening of the Show. The editorial section of this issue will be devoted especially to descriptions of products exhibited at the Show, and of other important products on the marine market.

Final advertising forms for the Special Show Issue will close Jan. 25th

PIGEON·HOLLOW SPARS

Famous Racing and Cruising Yachts in every country are equipped with our spars. Hollow and solid Marconi Masts, Brass fittings—Rigging work, Brass track and Slides

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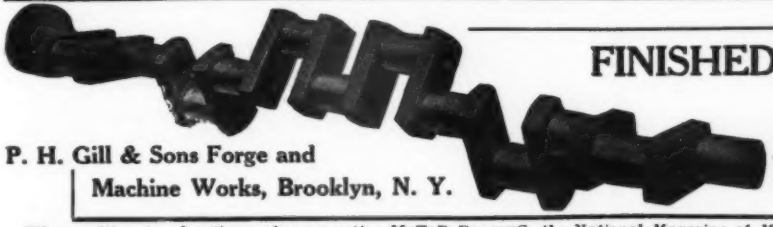
"Have run my Barker Motor thirty thousand miles in ten years and it is good for ten years more."—Name on request.

Build for long service—New low prices in effect

The BARKER FACTORY ***Norwalk, Conn.***

Write today for "Red Letter Book" of Motors

In New York: TOPPING BROS., Varick and Vandam Sts. **In Boston; TOPPAN CO., 101 Haverhill St.**



FINISHED CRANK SHAFTS

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

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Boatmen — Attention!

Actual Photograph

Get a Weather Jacket

Warm, Comfortable and Cold Proof

Wonderful Weather Protection. Heavily made. Perfect freedom. All-wool knitted cloth. One piece. Hood equipped with drawstring. Gray drab. Thoroughly tested by U. S. Govt. on North Seas. Give chest measurement only. Sent post-paid receipt.

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Get a Windproof Suit to wear over Weather Jacket

Waterproof, Rubberized double-texture fabric. Coat with hood and pants. Olive drab. Used by U. S. N. on Subchasers. Small, Medium, or large. **$3.50**

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Our Catalogue will help you select the right equipment for your boat. Copy sent on request.

PROMPT DELIVERY. RIGHT PRICES.

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EVERYTHING FOR THE PERSON OF THE YACHTSMAN, HIS OFFICERS AND HIS CREW

Clubs, yacht owners, commercial boat owners, should take advantage of our many years' experience in outfitting the mariner, both inland and deep sea.

Crews and Club Attendants furnished without Charge.

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99 to 105 Myrtle Ave., near Bridge St.
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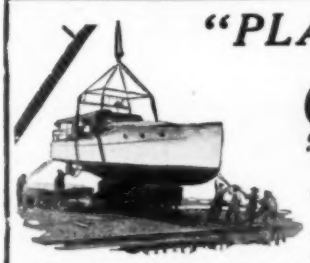
Telephone: Main 0804

"PLANK WITH Tide Water Cypress "The Wood Eternal" AND YOU PLANK BUT ONCE."



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Southern Cypress Manufacturers' Assn.

1317 Poydras Bldg., New Orleans, La., or 1317 Graham Bldg., Jacksonville, Fla.

TIDEWATER CYPRESS, "the Wood Eternal," is identified by the CYPRESS trade-mark "arrow." Please write us immediately if you can't find it.

"THE BEST LUMBER FOR BOATS, BIG OR LITTLE"

The Compass For Your Boat

should be the best obtainable. For seventy years Ritchie compasses have been the choice of experienced navigators.

Select the Ritchie for your boat

Our catalog will show you the one best suited for your needs. Send for a copy today.

E. S. Ritchie & Sons
Established 1850
110 Cypress Street
Brookline, Mass.

Speed! 20 TO 40 M. P. H.

Red Bank Sea Skiffs combine the staunchness and seaworthiness of the skiff with the speed of the modern high power runabout. The ideal inexpensive fast boat, giving all the sport without the expensive frills and mahogany finish.

26' by 6' Standardized Sea Skiff, seats 10

20 M.P.H. with 50 H.P. 35 M.P.H. with 200 H.P.
30 M.P.H. with 100 H.P. 40 M.P.H. with 300 H.P.

Makes an excellent yacht tender when fitted with hoisting irons. Hull complete except engine, shaft and propeller, $900 (including tax). Will install your motor for $100. Order now for Florida delivery.

RED BANK YACHT WORKS

Phone: Red Bank 840 Red Bank, N. J.

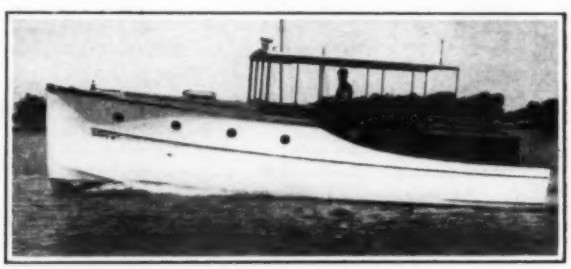
—the battery that won't die when a wave slaps it!

Columbia *Steel Case* "Hot Shot" for Ignition

waterproof—super-durable—unbreakable—costs no more than fiber case batteries

For sale everywhere

Columbia Dry Batteries
—they last longer

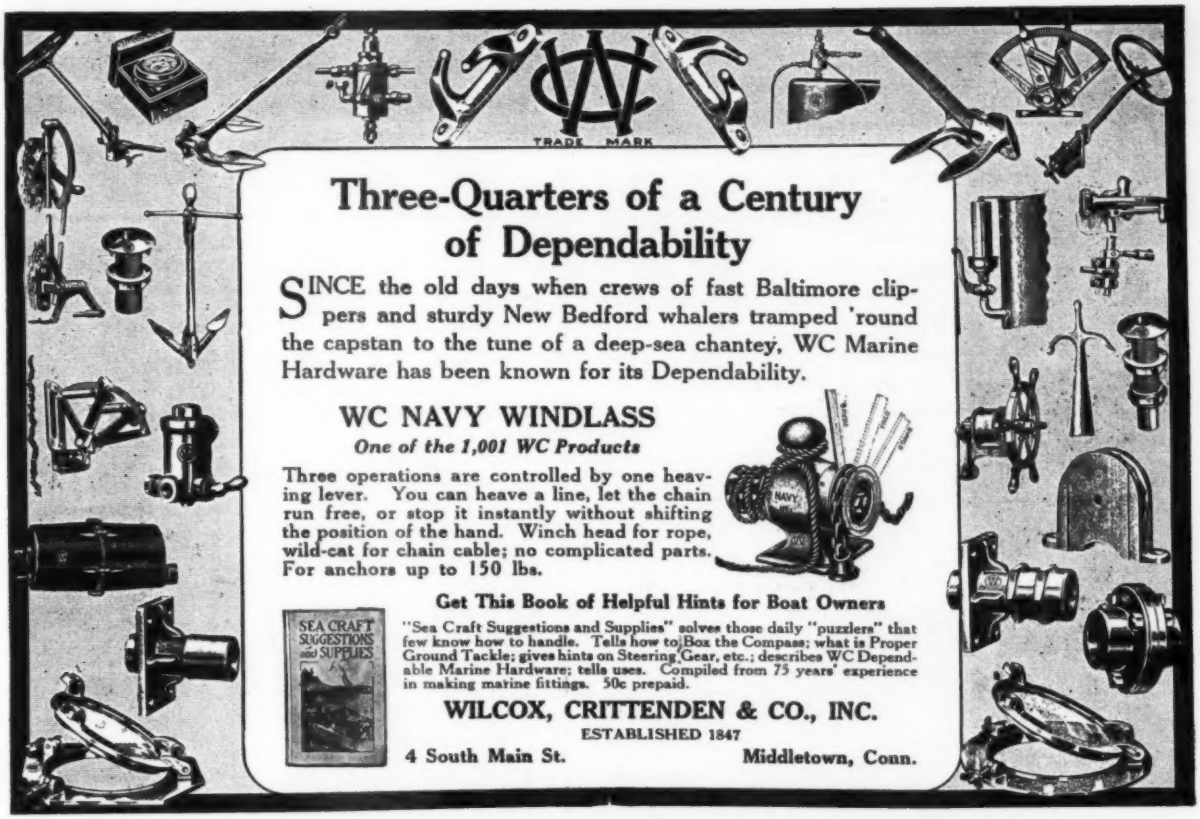


The Harrison Standardized Double Cabin Cruiser, 32 ft. x 8 ft. 6 in. x 2 ft. 10 in., equipped for Salt Water, Sleeps Six Persons, Motor 40 H.P., Speed 12 M.P.H. Price, $4950.00.

Illustrated literature sent on request.

R. W. HARRISON BOAT WORKS Established 1897 Bay View Park, Toledo, Ohio

Advertising Index will be found on page 114



Three-Quarters of a Century of Dependability

SINCE the old days when crews of fast Baltimore clippers and sturdy New Bedford whalers tramped 'round the capstan to the tune of a deep-sea chantey, WC Marine Hardware has been known for its Dependability.

WC NAVY WINDLASS

One of the 1,001 WC Products

Three operations are controlled by one heaving lever. You can heave a line, let the chain run free, or stop it instantly without shifting the position of the hand. Winch head for rope, wild-cat for chain cable; no complicated parts. For anchors up to 150 lbs.

Get This Book of Helpful Hints for Boat Owners

"Sea Craft Suggestions and Supplies" solves those daily "puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes WC Dependable Marine Hardware; tells uses. Compiled from 75 years' experience in making marine fittings. 50c prepaid.

WILCOX, CRITTENDEN & CO., INC.
ESTABLISHED 1847
4 South Main St. Middletown, Conn.

HERE'S A BIG SAVING—FOR YOU

5% *Special Allowance, If Your Order Is Received By January 1st, 1923.*
BROOKS—SAVES YOU from ⅓ to ¾ MORE THAN any other SYSTEM.
Brooks—ORIGINATORS of SIMPLEST AND LOWEST PRICED methods of MODERN BOAT BUILDING.

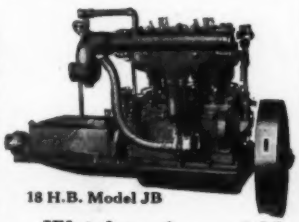
BROOKS—K. D. OUTFITS—and COMPLETED BOATS, BEST and LOWEST PRICED, have been leaders for years. THEY are powerful—racy—dependable and of newest design and construction. Full sized patterns at a slight cost.
BROOKS—NEW LINE of BLUE STREAK CRUISERS and RUNABOUTS, latest conception of mastercraftsmen. MOST ideal for BIG water cruises. Patterns and K. D. Outfit for 36' BRIDGE DECK CRUISER now on sale. Five others will be ready Jan. 1st.
WRITE—Service Dept. 2 enclosing 25c. for Prospective Boat Builders' Manual and Catalog, full of helpful information.

THE BROOKS COMPANY, Saginaw, Michigan
Successors to
THE BROOKS MANUFACTURING COMPANY,
Largest and most reliable Boat Builders

REGAL

PRICES AGAIN REDUCED

Established More Than Twenty-two Years



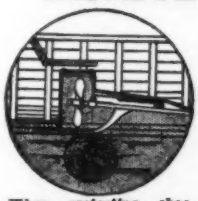
18 H.B. Model JB

LOWER manufacturing cost enables us to quote much lower prices for REGAL four-cycle engines. Made in sixteen sizes, one to eight cylinders. Weights from 135 pounds to 8500 pounds. Made to operate with gasoline or kerosene.

REGALITE ¾ kw. air cooled lighting plants for homes and boats. Write for catalogue.

REGAL GASOLINE ENGINE CO.
74 West Pearl St. Coldwater, Mich.

DISAPPEARING PROPELLER BOAT



When protecting skeg strikes an obstruction, propeller disappears safe in housing

THIS is the boat you should plan to buy for next season's outings. You will find it the ideal boat for fishing, hunting or picnicking. Each is equipped with a Marine Motor capable of any speed up to nine miles per hour. Vibration is practically eliminated. You can ride safely in a Disappearing Propeller Boat over sunken logs, snags and sandy shallows. An automatic device protects the propeller from injury. (See diagram.)

Write for descriptions and prices.

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725 Main St. Dept. F Buffalo, N. Y.

Canadian offices: Toronto, Canada.

New York Representatives: Consolidated Shipbuilding Corp. Morris Heights, N. Y.

When writing to advertisers please mention MOTOR BOATING, *the National Magazine of Motor Boating, 119 West 40th Street, New York*

Cap'n Allswell says:

" As Useless as a Swordfish to a Fencin' Master "

" That's my idea of a good engine without the proper propeller. Now take Columbian Bronze Propellers. Made for the job in hand, true in pitch an' balance. Easy on the shaft an' savin' on power. The Columbian Book tells all about them. Send for it."

THE COLUMBIAN BRONZE CORP.
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For N. Y. C. Sales Only: 44 Third Ave.

COLUMBIAN *Bronze* PROPELLERS

Oberdorfer Pumps

Noiseless in Operation

Oberdorfer bronze-geared pumps work silently and efficiently. Made for all internal combustion engines and particularly for marine use. Fewest possible working parts. Write for interesting booklet—sent free.

M. L. OBERDORFER BRASS CO.
125 Thompson Road Syracuse, N. Y.

A boat the entire family will enjoy

The Quaker Maid. 42'x 9'-6" V bottom Bridge Deck Cruiser. Complete K. D. frames furnished to Edwin E. Hollenback, 1804 Brandywine St., Philadelphia, Pa.

RICHARDSON Cruisers are staunch and steady. Built for comfort and seaworthiness. The greatest boat value. Fully equipped cruisers $2,500 up. K. D. frames to complete outfits for all types of boats. Let us quote.

SURPLUS U. S. NAVY EQUIPMENT
AND MOTOR BOAT SUPPLIES

Huge Quantities at Ridiculously Low Prices

Including Manila Rope, Life Preservers, Brass Liquid Fire Extinguishers, Lamps, Ships' Watches, and assorted hardware.

Solid Copper Binnacle, black outside, white enamel inside, with lamp handle, bracket, and 4-in. Standard Navy Compass, marked in degrees. Guaranteed new, accurate and perfect. Value $50.00. Price $18.00.

Dealers: Send for Complete List and Wholesale Price List

E. J. WILLIS CO.
85 Chambers Street
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KAPOC LIFE PRESERVERS
BRAND NEW, $1.50

THE SYNTONE RECEPTOR AMPLIFIER

A Quality Radio Receiving Set

The easiest set on the market to tune in the Radio Concerts broadcasted daily throughout the country. Mounted in a mahogany cabinet it forms a pleasing addition to the interior of any Home or Yacht. Absolutely guaranteed for high electrical efficiency and mechanical design. **Write for Descriptive circular.**

UNITED RADIO & ELECTRIC COMPANY
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DORIES LAUNCHES ROWING SKIFFS
Sailing Dories Marconi rigged Cat boats

Detachable motor boats.

15 ft. Toppan detachable motor boat $98. Carries 6. With Elto motor, $213.

21 ft. V-bottom Runabout, Universal motor, $1,000.

16 ft. Hydroplane Bullet, famous for its speed and seaworthiness. With Universal motor, $850.00.

22 ft. Cabin Dory, Universal motor, $950.00.

Send for catalog of type boat you want.

TOPPAN BOAT MFG. CO. Dept. M. Medford, Mass.

NO CAULKING OR SEAM FILLING

for ten years if you use

ELASTIC SEAM COMPOSITION TRADE MARK

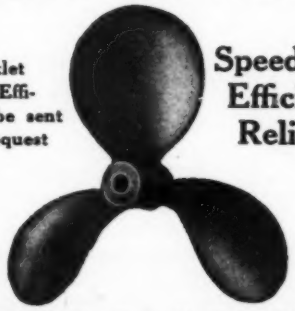
Used by the Government and by most steamship and Yacht Builders and by Amateur Builders.
Write today for catalog of

Elastic Seam Composition, Elastic Copper Paint, and Elastic White Yacht Paints.

H.B. FRED KUHLS 65th St & 3rd Ave. BROOKLYN, N.Y.

HYDE TURBINE TYPE PROPELLERS

Our booklet "Propeller Efficiency" will be sent free upon request



Speed Efficiency Reliability

HYDE WINDLASS CO., Dept. B, Bath, Maine, U.S.A.

Advertising Index will be found on page 114

WC Chute Planking Clamps

Save Time and Labor for Boat Builders

One of the 1,001 WC Products

WC Chute Planking Clamps can be used up or down on the turn of the bilge, and can be instantly fastened to the timbers or deck frames. The small teeth on the sliding jaw take a firm hold without marring the wood. Adjustable up to 2 in. Made of malleable iron and extra strong.

The Guarantee of WC

The WC trade mark on any article of marine hardware is a guarantee of its dependability, backed by the World's Largest Manufacturers of Marine Hardware. Put a good finish to a good job by equipping the boats you build with WC Dependable Marine Hardware.

WILCOX, CRITTENDEN & CO., INC.,

4 South Main St., Middletown, Conn.

ESTABLISHED 1847

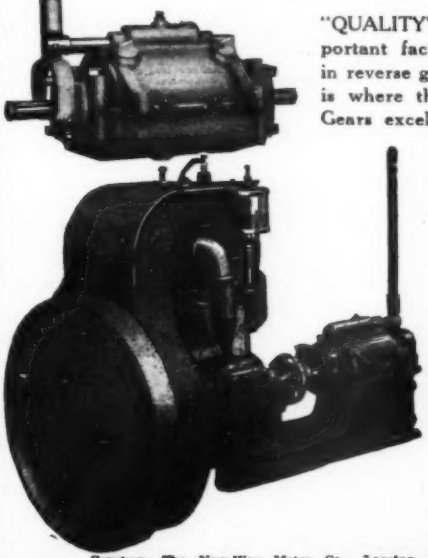
THE JOHNSON MARINE REVERSE GEAR

Is used on the

"New-Way" Direct Cooled Motor

It is a No. 1 Model "F" Ball Bearing Gear.

"QUALITY" is the important factor needed in reverse gears. Here is where the Johnson Gears excel.



Write Department 25 for Our Catalog

—

Made in Six Sizes From 1-100 H. P.

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Price is Very Low for Quality Given

Courtesy, The New-Way Motor Co., Lansing, Mich.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER, CONN.

GENUINE

HARTHAN

TRUE SCREW

PROPELLERS

The principle of a True Screw is strictly followed out in the patterns from which all genuine Harthan Propellers are made. This type is known to be the most efficient.

Harthan wheels are made of a special bronze composition, very tough and strong. This allows a very thin blade, the edges of which are brought down very sharp, which, with the extra high polish, reduces the power-absorbing element to a minimum.

We can supply propellers with two or three blades, in practically any pitch, either right or left hand.

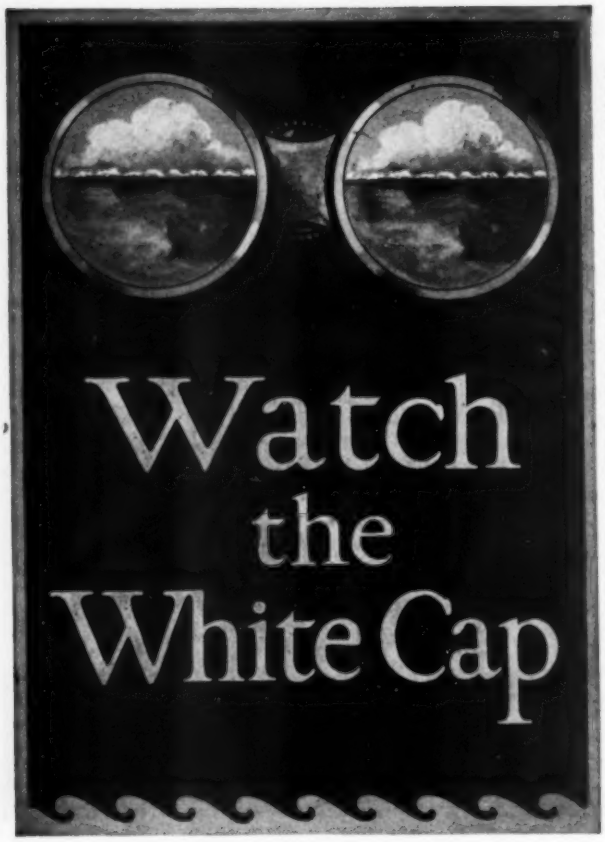
Look for the Trade-Mark on Each Blade

McFARLAND FOUNDRY & MACHINE COMPANY

1100 Willow St.,
TRENTON NEW JERSEY

Representatives

NEW YORK: Topping Bros., 122 Chambers Street
PHILADELPHIA: F. Vandercherchen's Sons, 7 N. Water Street.



Next time you have to crawl out from under and get one more open-ender, remember this, A COES Wrench always fits, it always holds, and one of them will fit more assorted nuts than a double-handful of open-enders.

Ask Your Dealer

COES WRENCH COMPANY WORCESTER MASS.

Working A Dead Reckoning Traverse

(*Continued from page 54*)

ship it is 8° W. The total change on a sailing of only 141.5 miles is 4°. Neglecting the change on a run of this character, would pile up an error of several miles. We might apply var 12° W to start with, and then change the CC 1° to the left every 38 miles sailed. Then our first CC would be: True 241° + Var 12° W = Mag C 253°+Dev 5° W = CC 258°. Perhaps on a short run of this sort, if we split the difference between the first and the last variation, and applied an average variation of 10° throughout, we might make destination closely enough, without changing the compass courses. But this manner of short-cutting is not recommended. If the wind held N x E, force 6, we would have a heavy beam sea, and probably considerable leeway. To make the Lightship direct, we would have to steer somewhat to the right of the above course. Here again comes in the estimate of experience. It would be idle to attempt an estimate from the data given in the problem, which, the student will perceive, was prepared for illustrative purposes, and could not take into consideration the performances of particular vessels. Leeway depends upon many elements: the direction and force of the wind and sea, the draught, freeboard and speed of the vessel.

We trust the above discussion may not convey the notion that dead reckoning is an impracticable unworkable scheme; but rather that it may tend to emphasize what has so many times been stated in these lessons, that dead reckoning data is approximate only, and in some measure based upon estimate, the reliability of which depends upon the skill and diligence of the navigator. Skilled navigators have accomplished extraordinary results with dead reckoning, and careless ones have piled up on the rocks, when their *figures* showed them to be miles away from danger. The great rule of safety is eternal vigilance, with devout respect for the sounding lead.

It would unduly lengthen these lessons were we to multiply problems. Nor is it necessary that we do so. The methods have been explained, and, it is thought, sufficiently illustrated. Perfection must come from practice. Thus we bring these lessons to an end, with the hope that however crude they may have been, they may serve to aid some boatmen to a better understanding and keener enjoyment of an avocation, which is one of the finest of hobbies and the sport of kings.

A final word of acknowledgment is due to Commander Sigmund Cohn, of the United States Power Squadrons, Inc., who read some of the proofs and offered helpful criticisms.

Questions on Lessons No. 10

1. What objects would you recommend as most suitable for use in taking departure, and why?
2. What is (a) deviation, (b) variation, (c) local attraction?
3. Are any of these elements subject to change, and if so, under what circumstances? Explain.
4. What is (a) true course, (b) magnetic course, (c) compass course?
5. What corrections are applied to the compass course to obtain (a) the true course, (b) the magnetic course?
6. What is leeway, and how is its amount determined?
7. In finding the true course, how would you allow for leeway on the (a) starboard tack, (b) port tack.
8. What is current?
9. Can it be seen from the ship?
10. What are set and drift?
11. How is the effect of current treated in working up the ship's position by Dead Reckoning?
12. Daylight weather clear CC 15°, wind has held from E x S. Position about 30 miles off coast. No land in sight. Good fix obtained previous day by astronomical observation. When referring the Dead Reckoning position to the chart, you find ample water and no obstruction in immediate vicinity. Shoal 12 miles NW of Dead Reckoning position. What would you do? Why?
13. CC, S 63° E, Var. 13° W, Dev. 5° E. Find magnetic course.
14. CC 187°, Var. 5° E, Dev. 2° W. Leeway on starboard tack 3°. Find true C.
15. TC, SW x W ¼ W, Var. 1¼ pt. W, Dev. ½ pt. E. Find CC.
16. TC, 354°, Var. 15° W, Dev. 7° E. Find magnetic C.
17. Course per magnetic rose from A to B is NNW ¾ W, Var. ¾ pt. W, Dev. ½ pt. W. What is TC from A to B? What is CC from B to A, Dev. ¼ pt. E?
18. Vessel leaves Lat. 36° 41′ N, Long. 69° 17′ W. Sails C 61°, 43 miles; C 126°, 17 miles; C 193°, 25 miles. During 5½ hrs. of this time is in current setting NNE ½ E, drift 1¼ knots. What is Lat. and Long. in?

(The names of successful Correspondence Course Students will be found on page 104.)

Advertising Index will be found on page 114

Steel Construction

12 Horse Power— **THE STEEL TWELVE** —12 Inches Draft

Length 26′—Beam 6′6″

Here is the ideal shoal-draft motor boat for pleasure or commercial use on rivers, bays, canals, lakes and coastwise waters. Staunch and sturdy for heavy duty work, —practically indestructible under conditions that would wreck an ordinary boat,— stiff and seaworthy enough to ride the waves like a cork,—you'll find this boat suited for every kind of ordinary or extraordinary service.

This is a tunnel stern boat with the propellor protected from damage because it operates within the tunnel.

The hull is built of No. 16 gauge galvanized steel and is divided by four galvanized steel watertight bulkheads, two of which act as collision bulkheads, the other two forming a watertight and fireproof engine compartment amidships.

The deck and lockers are made of cypress, the plank shear, combing and towing posts are made of oak, and the flooring is made of pine.

The forward cockpit measures 6 ft. x 7 ft. 6 in. and the after cockpit 6 ft. x 5 ft. 5 in., seating 14 passengers comfortably. The capacity can be increased to 26 passengers by installing additional seats.

In commercial work, the boat can be loaded up to five tons with sufficient free board.

Hatches in the forward and after decks provide access to the storage compartments and ample lockers are provided under the seats.

The standard motor equipment is a 10-12 H. P. Palmer Model N-R 2, bedded on two longitudinals and four transverse steel girders, covered with a hinged top galvanized steel hood, complete with reverse gear, bronze shaft and bronze propeller.

Any other motor equipment can be supplied by special arrangement or the boat can be purchased without motor equipment.

AMERICAN BALSA COMPANY, Inc.

WELIN MARINE DEPARTMENT

Motor Boats, Balsa Aquaplanes and Water Sport Buoyants

PHONE: HUNTERS POINT 3781

305 Vernon Avenue **Long Island City, New York, N. Y.**

JOSEPH VAN BLERCK'S

MESSAGE

TO

ENGINE DEALERS

The new VAN BLERCK Marine Engine offers a rare opportunity to live-wire engine dealers to become identified with the most promising account in the Marine Engine Field.

The new VAN BLERCK line consists of 2-4-6 and 8 cylinder engines built in two speed ranges and developing from 11 to 160 horse power, also a light weight high speed line built in 4-6 and 8 cylinder sizes which develop up to 300 horse power.

For the engine dealer who wishes to make larger profits this year, but who, even more, wishes to establish a sound, permanent business of ever increasing prosperity, the new VAN BLERCK engine is the solution.

Dealers interested should write at once to

Sexton Motor Company
INTERNAL COMBUSTION ENGINES

30 Church St., New York City, N. Y.

Sole Sales Representatives

Yard & Shop

(*Continued from page* 51)

What Is An 'As Is' Engine

By Wm. Bruns

THE question of purchasing a rebuilt or an as is engine is a subject that should be explained, as it is sometimes misunderstood. A number of firms advertise rebuilt engines. Among their stock are engines that have as yet not been rebuilt. It is known that an engine cannot be rebuilt in a day or even a week if a large size. It follows also that in a large establishment, where many hundreds of motors are taken in exchange, and accumulate on their floor, it usually is some time before they are sent to the mechanical or rebuilding department to be disassembled and rebuilt. Many of these engines before they are taken in trade as part payment for a new engine, from a man who wants more speed or a larger motor, etc., are operated and inspected by our service man while still in the boat. In many cases these engines are in good running condition and do not need rebuilding. In such cases they are sold at a lower price as is, since the firm was not put to any rebuilding expense on that motor. There are also cases where an engine is owned by a yachtsman who buys a new engine for his boat every two years, as he does his automobile, simply because he wants the latest model. Outfits of this kind usually need only slight overhauling, which can be done by the average handy man at home in spare time, without the aid of special tools or machinery. In a case of this kind an engine may be sold as is and the purchaser save considerable money and still have a high class and dependable outfit.

Sometimes an engine is possibly ten years old and has been kept up and overhauled at regular intervals by its owner, supplying new parts when necessary, etc. An engine of this kind can readily be sold to anyone as is and give the new owner many years of good and satisfactory service.

The firm of Bruns, Kimball & Co. have absolutely done away with more obsolete engines and motors beyond repair by smashing them up and selling them to foundry men for metal than all the rest of the rebuilding companies combined.

All engines sold as is by Bruns, Kimball & Co. are guaranteed exactly as represented. All rebuilt engines sold by this firm are backed with their iron clad guarantee, with the responsibility of this old established and well rated concern in back of it. The Bruns, Kimball firm is continually growing, doing a larger business every year, because of their straightforward methods and absolutely dependable rebuilt machines.

Bryant and Berry Propellers in New York

The well known propellers made by the Bryant & Berry Propeller Company are carried in stock regularly by the New York representative of this Company, the E. J. Willis Company of 85 Chambers St., New York, N. Y. The excellent materials and workmanship which go into the production of these wheels together with the excellence of their design is the reason for their wonderful efficiency.

New York Show Room for Elco

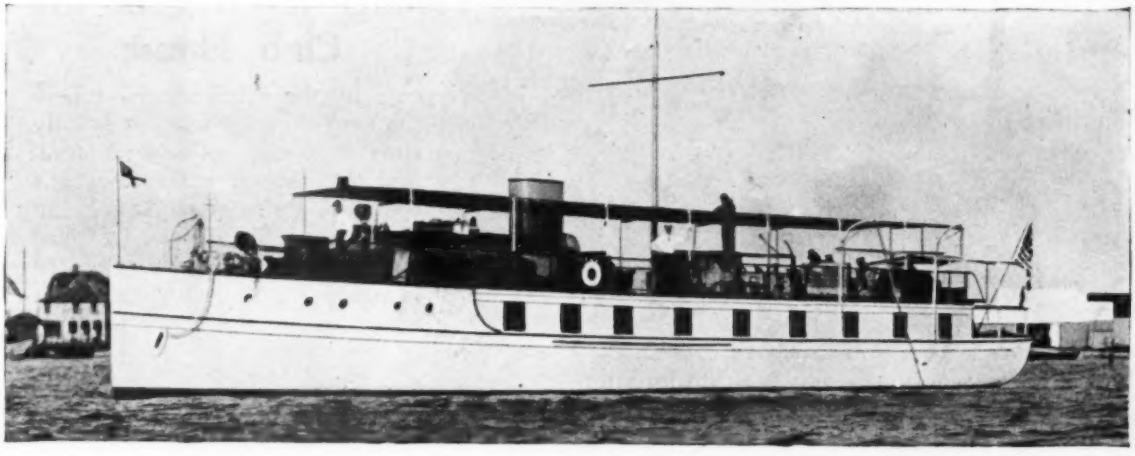
The Elco Works of Bayonne, New Jersey, announce the opening of a New York Home for their standardized Motor Craft, located at 46th Street and Park Avenupe. It is being especially built for the exhibit of all Elco products and Nelsco Diesel Engines. Located just off of Fifth Avenue and arranged so that the thousands of visitors to the Grand Central Palace will pass by, it will afford the public a wonderfully appointed place where all the products of the Elco company can be seen, making it possible for the prospective buyer to order his boat delivered to him just as he sees it at the New York Show Room. The Elco Works have always had a most attractive exhibit at all Motor Boat Shows, beginning years ago with the wonderful creation—the Elco de Luxe—and following through the years with the well known Elco 45 ft. Cruiser, down to the now famous Cruisette.

This finely decorated Show Room makes Elco the pioneer in this venture. Standardization has come to stay and, with their efficient plant and organization, they are in a position to deliver these boats at any specified date, either at their plant or anywhere in the United States.

The value of the Cruisette is at once evident to those who have the opportunity to compare Elco prices with the prices of other builders, and it is possible to give this value only because of perfect standardization.

(*Continued on page* 72)

MATHIS YACHT BUILDING CO.

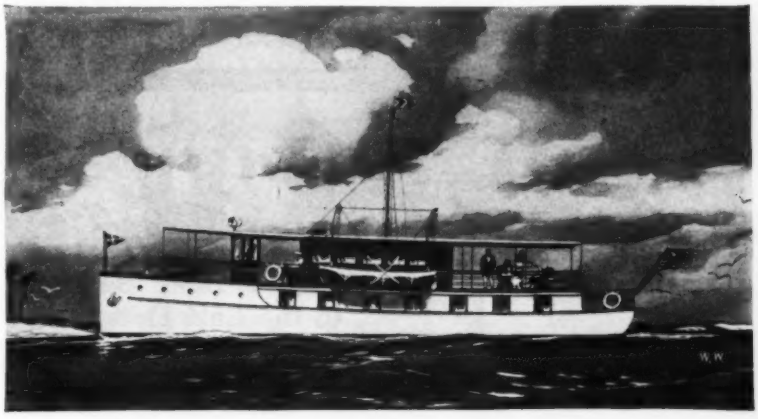


Since 1910 when we designed and built the Ednada III for George C. Thomas, Jr., the Mathis Yards have enjoyed consistent leadership in the new-type cruiser-houseboat then created. Combining yachtiness, comfort, speed and economy this Mathis type of cruiser-houseboat has been successfully adapted to varying sizes ranging from 40 ft. to 110 feet.

The utmost perfection, right up-to-date, of the cruiser-houseboat is found in the

new 65 footers

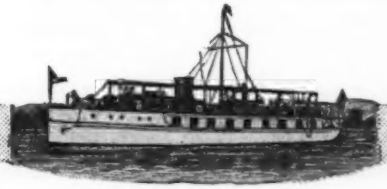
just created by us and nearing completion in our yards. In these are combined all the advantages of any houseboat previously produced up to 80 ft., with special consideration to seaworthiness, and at the same time with a great saving in construction and operating costs.

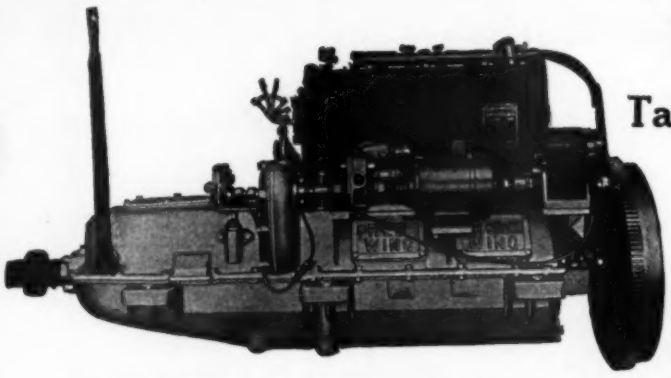


MATHIS YACHT BUILDING COMPANY

Specialists in Houseboats and Cruisers from 40 to 120 ft.

COOPER'S POINT, CAMDEN, N. J.

HOUSE BOATS  AND YACHTS



New Models F and B with pressure oiling system.
Paragon reverse gear running in oil bath.

Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

Talking It Over in the Club House

In the Club-house—where the topic of conversation usually runs to things entirely nautical, and the subject of engines has the floor—you find Red Wing Motors and especially the "THOROBRED" referred to in terms that make you feel you **want** one, or make you want all the information you can get on these out-of-the-ordinary light craft power plants.

We can supply you with information about the Speed and Power of these little "huskies" that will open your eyes to what a light engine can be built to do, and we'll guarantee you won't regret sending in your name and address. The mail travels every day—but **now** is the time. Five sizes, from 10 to 40 H.P.

RED WING MOTOR COMPANY

Department B **Red Wing, Minn., U. S. A.**

Eastern Distributors: Verrier, Eddy Co., 222 E. 42nd St., New York, N. Y.; W. H. Moreton Corporation, 780 Commonwealth Ave., Boston, Mass.; W. E. Gochenaur Mfg. Co., 631 Arch St., Philadelphia, Pa.; Hutchinson Bros., Alexandria Bay, N. Y.

Make Your Boat Beautiful to the Last Detail

Model 4 Anchor or stern light

SEE that your flag pole is in keeping with the rest of your fittings. A well appointed boat carrying an unattractive flag pole is as incongruous as a spick and span yachtsman wearing a battered cap.

Models 2 and 3

WC ELECTRIC LIGHTED FLAGPOLES

One of the 1,001 WC Products

are made of polished brass tubing or of solid mahogany with brass trimmings, and fitted at the top with a two candle power electric bulb which provides the stern light required by law. A Holophone globe protects the bulb and enhances the attractiveness of these beautiful flag poles. At your dealer's; or write for descriptive folder and prices. Be sure to look for the WC Mark of Dependability.

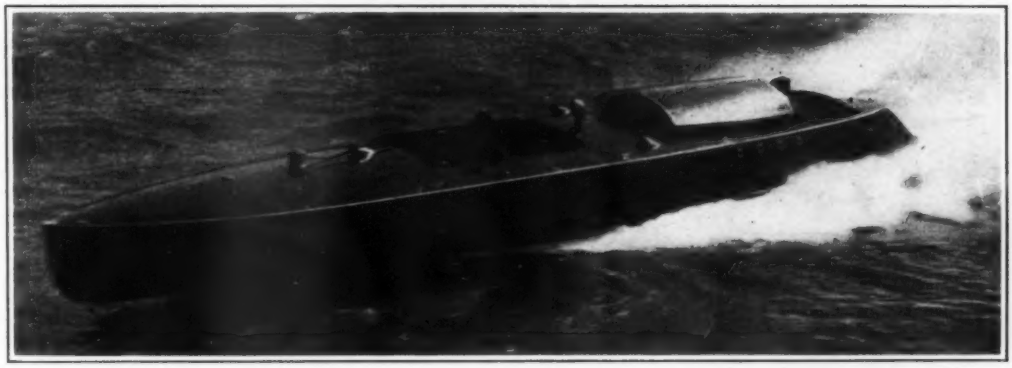
Get this Book of Helpful Hints to Motor Boaters

"Sea Craft Suggestions and Supplies" solves those daily "puzzlers" that few know how to handle. Tells how to Box the Compass; what is Proper Ground Tackle; gives hints on Steering Gear, etc.; describes WC Dependable Marine Hardware; tells uses. Compiled from 75 years' experience in making marine fittings. Sent prepaid for 50c.

Wilcox, Crittenden & Co., Inc., (Est. 1874)
4 South Main St., Middletown, Conn.

Advertising Index will be found on page 114

Hacker-Craft



WOODFISH, Owned by Mr. Edsel Ford, FASTEST DISPLACEMENT RUNABOUT IN THE WHOLE WORLD

WE ARE now in position to build a number of Runabouts for 1923, and will be glad to figure on that SWEEPSTAKES, GOLD-CUP, CLASS-BOAT, or SPECIAL BOAT. WE build only the highest class, and DESIGN, WORKMANSHIP, & Maximum results are absolutely assured.

MODEL—23.

Get full particulars on this new HIGH GRADE, HUSKY, DOUBLE COCKPIT Mahogany Runabout, before placing your order for 1923. The greatest value in such combination ever offered to date. Will seat six or eight comfortably. Controls from forward cockpit. Will take you anywhere. Powered with 50 H. P. Marine Motor, speed 20-24 miles. Electric starter and lighting. Windshield, and completely equipped. Must be seen to be appreciated.

Price complete F. O. B. Factory $2750.00

ALSO POWERED WITH PACKARD Single Six Motor. Price upon request. Twelve of these boats will be available for FLORIDA deliveries.

We have for immediate delivery a few of our 21 foot, and 26 foot standard outfits, with speeds of from 18 to 25 miles. Also, a few good used Hackercraft boats.

HACKER BOAT COMPANY

1525 CRANE AVE. DETROIT, MICH.

SEND FOR THE HACKER BOOK OF PLANS

WE ARE PREPARED TO FURNISH PLANS FOR ANY TYPE OF RUNABOUT, DAY CRUISERS, AND REGULAR CRUISERS TO YOUR ORDER, UP TO 125 FOOT, and solicit correspondence.

"Did I Marry a Man —or a Business?"

AS he stood before the altar with Fay Gilman, George Judson devoutly sought to realize the minister's words that God had made himself and Fay into one in that hour. ¶ But a man and woman are two individuals and when Fay's home and George's business came into conflict Fay was unable to keep from crying: "Did I marry George or did I marry his Business?"

The Very Soul of America Is in this Great Novel

MAN'S COUNTRY

By Peter Clark Macfarlane

Illustrated by Charles D. Mitchell

He Was a Self-made Man—George Judson was brought up in humble surroundings. At fourteen he was supporting his family; at twenty-six he was the great financial wizard of the automobile industry. Business was his inspiration —his god. It came first, always—

She Was a Cultured Woman—Fay Gilman had beauty and brains. As a sweetheart she had found Judson a delightful playfellow. But as a husband he did not seem to understand her needs. So on the day when he needed her comfort and sympathy—when his business was on the verge of failure—she was having tea at a Country Club.

"Man's Country" **is a novel that is a challenge to every ambitious man and a challenge too, to every woman who holds home dear. It is YOUR story put into a novel. Read it today.**

On Sale at Every Good Bookstore $2.00

Cosmopolitan Book Corporation

119 WEST FORTIETH STREET, NEW YORK

Advertising Index will be found on page 114

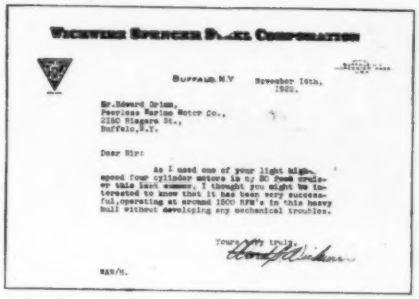
PEERLESS

HIGH SPEED MOTORS

"A product of experience and development in actual marine service"

4 Cylinder, 125 H. P., Weight 750 lbs., Price $2,000.00
6 Cylinder, 200 H. P., Weight 950 lbs., Price $3,000.00
8 Cyl., 250 H. P. and 12 Cyl., 400 H. P. built to order

"Righto" Owned by Mr. Ward Wickwire



WICKWIRE SPENCER STEEL CORPORATION

BUFFALO, N.Y. November 16th, 1922.

Mr.Edward Grimm,
Peerless Marine Motor Co.,
2160 Niagara St.,
Buffalo,N.Y.

Dear Sir:

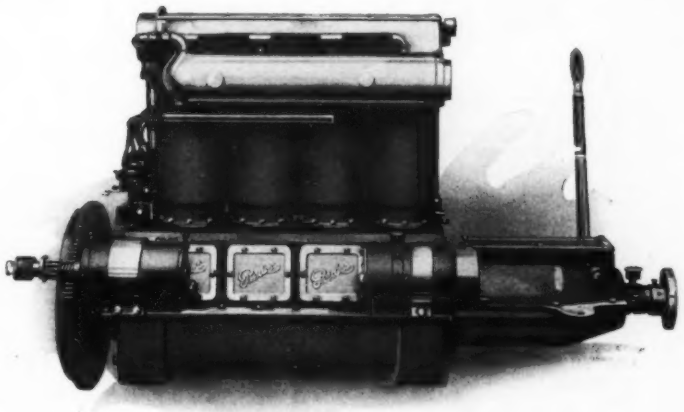
As I used one of your light high speed four cylinder motors in my 30 foot cruiser this last summer, I thought you might be interested to know that it has been very successful,operating at around 1800 R.P.M's in this heavy hull without developing any mechanical troubles.

Yours very truly,

WAW/H.

The wonderful performance of the new 125 H.P. High Speed Peerless Motor has transformed Mr. Wickwire's boat into a real high-speed cruiser. This boat, which is of the round bottom type, was equipped with a regular marine motor of standard make, developing about 50 H.P. The speed attained was 10 miles per hour. With the new Peerless Motor the speed was increased to 17 miles per hour, the vibration was entirely eliminated, the noise reduced, and the flexibility increased, and on account of the small space required it was possible to install the motor entirely under the cock pit floor. The former motor being much larger, it was necessary to let the forward end of it extend into the main cabin, which was of course a very objectionable feature and was entirely eliminated with the installation of the new Peerless Motor.

We have made a number of 4 cylinder installations that have been operating throughout the past season, and in every case the performance has been equal to that of the motor installed in Mr. Wickwire's boat. We have installed the 125 H.P. motor in several runabouts that have attained a speed of over 40 miles per hour. These boats have ranged in size from 21' to 26' in length.

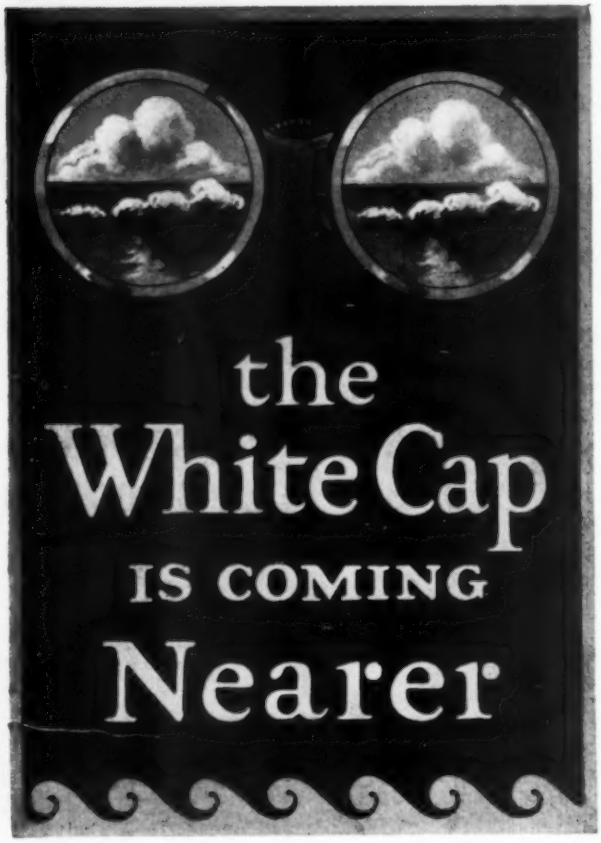


We also manufacture Medium and Heavy Duty Models ranging from 5 to 50 H. P.

PEERLESS MARINE MOTOR COMPANY

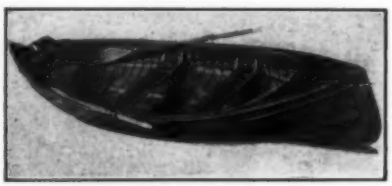
2160 NIAGARA STREET MEMBER **BUFFALO, N. Y., U. S. A.**

LOOK FOR US AT THE MOTOR BOAT SHOW, SPACE G, NEAR MAIN ENTRANCE



SKANEATELES BOAT
and CANOE CO.

Established 1893



Boats
that
will
last!

For Rowing, Sailing and
Outboard Motor

Write for our catalog

38 Jordan St. Skaneateles, N. Y.

Yard & Shop

(*Continued from page 66*)

Judging from the number of sales and the enthusiasm of the owners, it is safe to say that the Cruisette has proven itself to be the most successful Motor Boat ever built.

It is a part of the Elco standardization plan that each Cruisette be thoroughly perfected in every detail and then completely tried out so that, if the owner desires, he can immediately start off in a cruise without feeling that he must be accompanied by a corps of experts. In this respect the success of the Cruisette has been phenomenal. As examples of performance, a Cruisette made the trip to Florida, by way of Chesapeake Bay and the open sea, one went to Toledo, three went to Baltimore, two to the Thousand Islands and four made the trip down Long Island Sound to Boston and vicinity.

The hull of the Cruisette has been very carefully developed with the idea of providing a boat that would be thoroughly safe and seaworthy under all possible weather conditions and yet have an attractive yachty appearance.

The builders are always alert to the possibility of improvement and have concentrated their efforts on the 1923 model, which they think will surprise even the most fastidious.

Exhibition Rules for Motor Boat Show

The rules which are given below were formulated at a meeting of the executive committee in charge of the National Motor Boat Show and are to be a part of all contracts for space at the forthcoming exhibition:

All internal combustion engines offered for exhibit and sale must be new and unused engines, designed and manufactured originally and from the beginning with the intent and for the purpose of marine propulsion, which have not been sold by the original purchasers to third parties before their complete assembly for use as marine propulsion engines.

All engines exhibited must bear the name or trade-mark of the manufacturer and the sale of any of these engines must be accompanied by the guarantee of the original manufacturer. Foreign marine motors may only be exhibited by the original manufacturer or by his authorized representative in this country.

The rules included in this section shall also apply to all engines installed in boats intended for exhibit.

Bear Cats Make Good Trollers

It is unusual for a fast trophy winning motor boat to be serviceable for fishing and other recreations. The story told by Dick Locke of Detroit is therefore interesting. Driving the same Bear Cat runabout with which he won some spectacular races, he took a party of friends on a fishing trip in Lake Erie. After running from Detroit at full speed the boat was throttled down to a steady crawl and the lines cast. For several hours the motor ticked off a staccato 1-2-3-4 with the untaltering regularity of a watch. After eighty odd fish had been taken the motor was opened wide and run home made at better than 32 miles an hour.

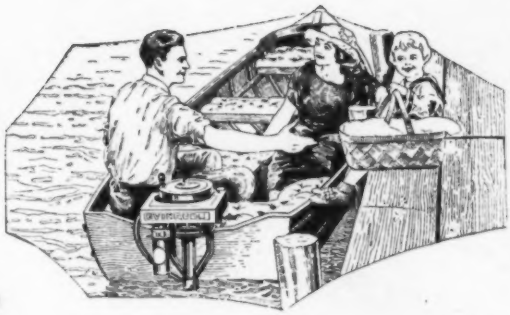
Although throttling down between 200 and 300 revolutions per minute is no trick for any Bear Cat, it is nevertheless a more or less uncommon attribute, and a highly desirable one. This boat happens to be the original Bear Cat. It was the first one turned out by the Belle Isle Boat & Engine Company and still carries its original motor. During its three years of life it has been in daily service throughout the open season on the lake. The boat is rarely driven at anything less than full speed. In the face of this severe service, his craft has been successful in winning many races against specially built craft.

Navy Selling Boats

The various navy yards throughout the country and more particularly the ones located at New York, Philadelphia, Boston, and Norfolk, Va., are disposing of numerous surplus small boat hulls which are located at these various yards. These range in size from small dinghies and cutters to steamers of a maximum length of 50-feet. There are motor dories and life boats, as well as motor sailing launches, whale boats, and in fact every type of small boat which is used in the navy. The method of selling these is identical in all cases and it is necessary to secure a copy of the catalog listing the otems to be sold. Bids are then made in accordance with the printed instructions furnished and the lot to be sold will be awarded to the highest bidder on the date of sale. A sale at Norfolk will be held December 30, 1922, one at Norfo'k, January 3, and one at Boston, January 10. Copies of the catalogs can be obtained from the Supply Officer at each of the several yards mentioned.

Advertising Index will be found on page 114

Your Family Pal



LIKE your car, an Evinrude is a family playmate. At dawn, Dad speeds away to his favorite fishing-ground. Before lunch, Mother takes the youngsters up-shore to bathe. And at dusk you all breeze over to the island for a picnic supper. No tiring oar-work—your ever-faithful Evinrude supplies the "taxi" service.

For dinghy or tender, this husky motor is the handiest power-plant made, because it is so easily attached or detached and takes but little room when not in use. For a dozen years the Evinrude has led the outboard motor field. Your choice of the genuine Evinrude is today endorsed by 140,000 sportsmen-users.

There are two models of the genuine Evinrude — Standard and Lightweight. See them at your sporting goods or hardware dealer's. Or write for free catalog.

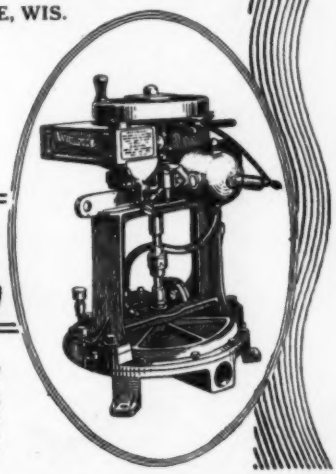
EVINRUDE MOTOR COMPANY

107 Evinrude Block, MILWAUKEE, WIS.

DISTRIBUTORS:

69 Cortlandt St., New York, N. Y.
780 Commonwealth Ave., Boston, Mass.
119 Broadway, Oakland, Cal.
211 Morrison St., Portland, Ore.

EVINRUDE



Evinrude Centrifugal Pump

Extensively used by scow and barge-owners. Ideal as bilge pump. A compact, portable unit unexcelled for a score of uses. Capacity 5000 gallons per hour at 20 foot head. Powered by built-in 2 H.P. Evinrude engine. Price $150, f.o.b. Milwaukee. Write for literature.

11 G.A.

Ask your Steno—

ONE hundred thousand booklets explaining the "what" and the "why" of War Department surplus are ready for free distribution.

The War Department wants you to know there are a host of bargains to be offered the public in the coming months; and it wants to be sure you know how to get your full share of the benefits for buyers in all War Department sales.

The booklet illustrated on this page will be a decided help.

It explains just how sales are conducted—how simple a matter it is to buy from the War Department; and it gives a clear idea of the wide range of commodities remaining to be sold.

Many notable sales will be held in the next few months. A partial schedule is given herewith.

Ask your stenographer to send for your copy of the booklet, and be prepared to make capital of War Department bargains. Address Major J. L. Frink, Chief, Sales Promotion Section, Room 2515, Munitions Bldg., Washington, D. C.

Write for this booklet Today!

WAR DEPARTMENT SELLING PROGRAM
JANUARY.
Jan. 8th.—SODIUM NITRATE—N. Y. C. Sealed Bid. For information and proposal form write District Ord. Salvage Board, Room 808 Army Bldg., 39 Whitehall St., N.Y.C.
Jan. 16.—RAILWAY EQUIPMENT—Wash., D. C., Sealed Bid. For Catalog write, Chief, Corps of Engineers, Room 2830 Munitions Bldg., Washington, D. C.
Jan. 16th.—Q. M. SUPPLIES. Brooklyn, N. Y., Auction. For catalog write Q. M. S. O., 1st Ave. & 59th St., Brooklyn, N. Y.
Jan. 19th.—Q. M. & ENGINEER SUPPLIES"—Camp Humphries, Va., Auction. For catalog write C. O., Camp Humphries, Va.
Jan. 24th.—AIR SERVICE SUPPLIES—Fairfield, O., Auction. For catalog write, C. O., Fairfield Air Intermediate Depot, Fairfield, Ohio.
SEND FOR CATALOG
FEBRUARY.
(These sales dates subject to change.)
Feb. 1st.—MEDICAL & HOSPITAL SUPPLIES—Brooklyn, N. Y., Auction. For catalog write Medical Supply Officer, 1st Ave. & 59th St., Brooklyn, N. Y., or M. Fox & Sons Co., Official Auctioneers, Baltimore, Md.
Feb. 6th.—Q. M. SUPPLIES—Fort Sam Houston, Tex., Auction. For catalog write Q. M. S. O., Fort Sam Houston, Texas.
Feb. 9th.—Q. M. SUPPLIES—Chicago, Ill., Auction. For catalog write Q. M. S. O., 1819 West Pershing Road, Chicago, Ill.
Feb. 13th.—Q. M. SUPPLIES — Jeffersonville, Ind., Auction. For catalog write Q. M. S. O., 1819 West Pershing Road, Chicago, Ill.
Feb. 16th.—Q. M. SUPPLIES—Columbus, Ohio, Auction. For catalog write Q. M. S. O., 1819 West Pershing Road, Chicago, Ill.
SEND FOR CATALOG
WAR SURPLUS
THE STORY OF THE WAR DEPARTMENT'S SALE OF ITS SURPLUS PROPERTY
WAR DE

The Story of the War Department's Sales of its Surplus Property "What it has for Sale "Where it is Located "How to Buy it." "

The Government reserves the right to reject any or all bids.

WAR DEPARTMENT

Advertising Index will be found on page 114

QUALITY SNAPRINGS

Range from 1" to 72" in 4370 sizes. 3,000,000 perpetually stocked.

Write for copy of Booklet "Cast to Last"

THE Piston RING COMPANY

MUSKEGON, MICH.

The Cruise *of the* Hippocampus

by

ALFRED F. LOOMIS

Now published Complete in Book Form

"THE Cruise of the Hippocampus" which originally appeared serially in MoToR BoatinG has now been published in book form by one of the country's leading book publishers. Unquestionably one of the finest cruise stories ever told, this book was written by a typical boat lover for typical boat lovers.

Perhaps it was Mr. Loomis' ability to visualize his audience through long acquaintance with the readers of MoToR BoatinG that enabled him to talk so intimately of the boating joys and boating trials he met with on this cruise. Starting from New York with two companions in a 28-ft. auxiliary yawl the author experienced about every variety of excitement and adventure there is to be found on a cruise of three or four thousand miles. The trip covered many points of interest down the Atlantic Coast, through the West Indies and across the Caribbean Sea to the Panama Canal.

You'll enjoy this book as proof of the possibilities of small boat cruising, and you'll enjoy it again just as a mighty good story. It presents the rare combination of an actual trip recorded by an interesting writer. There is no need to draw on the writer's imagination when typing his manuscript in the yawl's cabin in some distant port.

Alfred F. Loomis is a writer of real ability, with wide observation and long experience in the operation of small boats. As an officer on a U. S. sub chaser during the war he absorbed the traditions and atmosphere, which makes his writings an authentic picture of life on the sea.

Price $2.00

MoToR Boating 119 West 40th Street
New York, N. Y.

First Motor Boat Completes Trip Around World

(*Continued from page 22*)

Tahiti, Samoa, the Fiji Islands, New Caledonia, Sydney, Australia, New Guinea, Celebes Islands, Java, Singapore, Sumatra, Ceylon, India, Egypt, Crete, Greece, Sicily, Naples, Marseilles, Barcelona, Gibraltar, Cape Verde Islands, Porto Rico, Miami, Norfolk and New York. The Gowens, laughingly, now that it is over, tell of their many experiences. But they do not forget the dreadful monsoons that seemed to take the heart out of things; the scorching heat and all the hardships that they have passed through; the rolling seas that often threatened to engulf the little Speejacks; and yet they tell of beautiful sunsets in rugged harbors, of islands of savages, filled with romance; of the burgeoning colors of a sinking sun over Pompeii, of the fabled splendor of Arabia, and the unsung wealth of Singapore.

After the arrival of Speejacks at Kingston, Jamaica, without unusual incident, she was held up there for four days because of heavy seas which prevented her crossing the Caribbean. Because of limited fuel capacity she was then towed by the American steamer Eastern Queen, to Tiokea, about 500 miles from Tahiti. There she got under her own power and from that time on for more than fifteen months she cruised without assistance. We cannot help but feel that Speejacks was in truth, a Spartan-ship, that made it a point of honor to go along on her own, and a matter of pride almost to refuse help. Nothing of note happened at Tahiti, and the party set sail for the Samoan Islands and the colorful Fijis, where adventure of the realest and most thrilling sort began. Mr. and Mrs. Gowen were greeted by a huge black man, noble for all his color, who was the son of the old King of the Fijis, and whose father had been a cannibal. However, the noble Prince was a graduate of Oxford, and had come back in true patriotic spirit to educate his people. For all his grandiloquence, however, we are told his great shock of black bushy hair was a great point of pride with him and he was very careful never to get it wet!

Shortly after Christmas, in 1921, Speejacks and its crew left for New Caledon'a, despite advice not to go because of bad weather conditions. The Gowens tell us that they often wished they had heeded this advice, for the weather and sea toyed with the little craft like a cat with a mouse. Mr. Gowen modestly declines all laurels, and declares that but for the inspiration and unfailing spirit of his wife, he doubts where they might be today.

Going along to Sydney, the party was allowed to enjoy an interval of civilization when they spent several weeks at the Sydney Yacht Club in Australia. But this did not last long, compared to the many months they were to see no white man except on their own boat. They journeyed up the Australian Coast as far as Cooktown, only to find that they had missed their mail connections and that news from home would be an impossibility for many months to come. They sailed around the southern coast of New Guinea in the direction of the savage Solomons. In their journey toward this point they had to pass through a group of islands, the Trobrian Islands, unchartered and untravelled. The little boat did not achieve this stretch bravely. It ran on a reef and broke a propeller.

At the Solomon Islands, they traded with natives in presence of armed guards. Mr. Gowen delightedly tells of Mrs. Gowen's disappointment at not being captured and carried off by cannibals. She wanted to be, so he says, a real heroine, rescued 'n' everything. But Mrs. Gowen does not let him get away with this! In retaliation, she tells of a savage dance when the natives came toward them with javelins raised. At the time, Mr. Gowen was trying to shoot a picture. The next thing Mrs. Gowen knew, her brave husband was standing in back of her, and the natives' amusement made them break up the dance with laughter.

Speejacks availed itself of the opportunity to visit the Hermit and Admiralty Islands, which all form a part of this group. It must have been a breath-taking experience to find that there was literally no more than a cupful of gasoline on board in the middle of Humboldt Bay. Surely Providence must have watched over the ship and its dauntless crew. There were times when the storms seemed to cease, and winds subside when Speejacks showed her bow; when the seas smiled and the stars guided the wanderers in their unprecedetned adventure.

They found themselves in Java, where the little native girls staged a queer, beautiful dance for them, and there it was that Speejacks went into drydock to have her broken propeller repaired and be made ready for only goodness knew what. It was little wonder that the Gowens were actually glad that they had an excuse to get off the ship, for the beauty of Java, they say, made up for all the homesickness and seasickness and hardship.

(*Continued on page 78*)

LOCKWOOD-ASH MOTOR CO BROADCASTING

We Announce

A NEW AND UNIQUE MARINE ENGINE

THE MODEL 41, SINGLE-CYLINDER 4 CYCLE, 5 H. P. MOTOR

ADOPTED as standard equipment for 1923 by the largest boat builders and distributors in the country.

Built around Ford Parts—replacements anywhere.

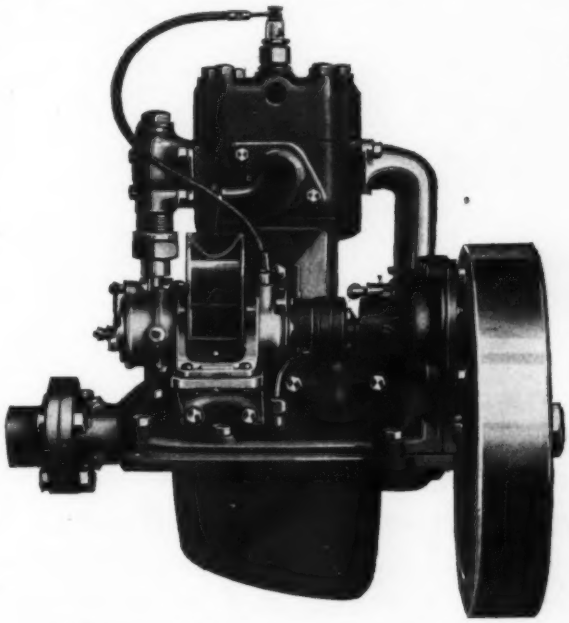
Equipped with Bosch magneto and impulse starter.

Speed Range 300 to 1000 revolutions per minute.

Weighs approximately 165 lbs.

Price complete $117.50, F. O. B. Jackson.

This is the motor you have always wanted.



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Including complete description of these exceptional features: Counterbalanced crankshaft—Special breather pipe—Liberal main bearing surfaces—All bronze water pump with stuffing nut—Bronze eccentric strap—And many others.

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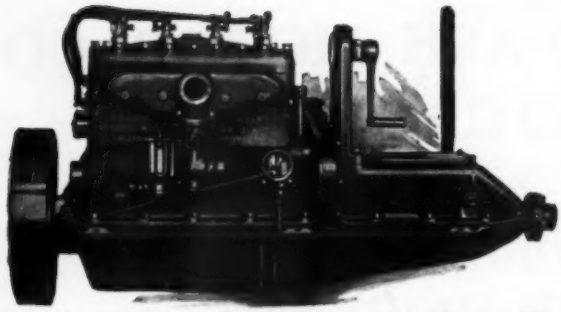
Builders of Marine Engines for 20 Years



NIAGARA "Special" 9-15 h.p. Unit Power Plant

The Ideal Power Plant

A REAL four cylinder four cycle unit power plant that gives the easy starting, steady power, flexibility and freedom from vibration that you can find only in this type of engine. Costs no more than most two cycle engines of equivalent power.

Bore 2⅝", stroke 4", Medium duty, 600 to 1100 R. P. M., 12 to 15, H.P. A complete and compact little motor that looks ideal in any boat. Regular equipment includes built-in rear starter, reverse gear, sight-feed lubricating system, carburetor, superheated intake manifold, detachable cylinder head, bronze rotary water pump, covered valve mechanism. with option of coil and timer, magneto or Atwater Kent ignition.

Superior Engines for Larger Types of Boats

THE NIAGARA E-2 is 12-14 h.p., 2-cyl., 4 cycle, for FISHING AND HEAVIER SMALL BOATS.

The NIAGARA E-4 is 20-30 h.p., 4 cyl., 4 cycle, for FISHING, LIGHT CRUISERS AND SPEED RUNABOUTS.

The NIAGARA D-4 is 40-60 h.p., 4 cyl., 4 cycle, for COMMERCIAL BOATS, TUGS, ETC.

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Write today for catalog and prices. State h.p. interested.

Niagara Motors Corporation

206 Niagara Blvd., Valuable Territory Available Dunkirk, N. Y.

First Motor Boat Trip Around World

(Continued from page 76)

lionaires dined the wayfarers out of golden plate and finest crystal. There they saw all the fabled gaudiness, precious ivories, and scented woods of the Far East. From Singapore, they went to Sumatra for a short stay, after which they attempted to go to Ceylon, but ran into a monsoon and heavy head winds and was unable to make the trip.

Then they went to Aden, Arabia. Aden, it is believed, was the original garden of Eden, and Eden is supposed to be underneath. Mr. and Mrs. Gowen were shown the grave of Cain, and where the Queen of Sheba used to bathe.

Mrs. Gowen did her share of running the ship, taking a man-sized turn at the wheel, but she declares that the Red Sea must have given Dante the inspiration to write his Inferno. At Alexandria and Cairo, they were entertained at the Hotel San Stefano by famous people, and at this place, too, they procured camels and rode far into the desert. From there they went to Athens, and found it necessary to take shelter in the island of Crete. For three interminable days, they stayed at Crete and Mrs. Gowen says it was the most horrible place they struck on the whole trip.

Speejacks cost the Gowens $500,000 before it was actually ready to start on its famous trip. Several times, her specifications had to be changed, and while at the builder's plant at Morris Heights, she was equipped with two Winton engines of 260 h.p. each. Speejacks is 98 feet in length and 17 feet in breadth. It is planked with teak and copper-bottomed. In addition to her two engines, she has two small auxiliaries for lighting, heating, and other purposes. The yacht was carefully planned to do just what she has done, and she certainly has done it wonderfully.

Mr. Gowen and his party did not start out to do a stunt. The idea of taking a trip around the world came to him as result of his doctor's orders to take a long rest. Since he had always been an enthusiastic yachtsman, and was at the time Commodore of the Cleveland Yacht Club, he saw no reason why he should not undertake this heretofore unattempted trip around the world in a motor boat. It was something different, and so he did it. The trip is ended, and though they say they would not have missed it for anything, no one of them would do it over again. Would you?

Speejacks Is Met at Sea and Welcomed at Miami Beach by MoToR BoatinG's Representatives

By I. L. House and Jesse H. Jay

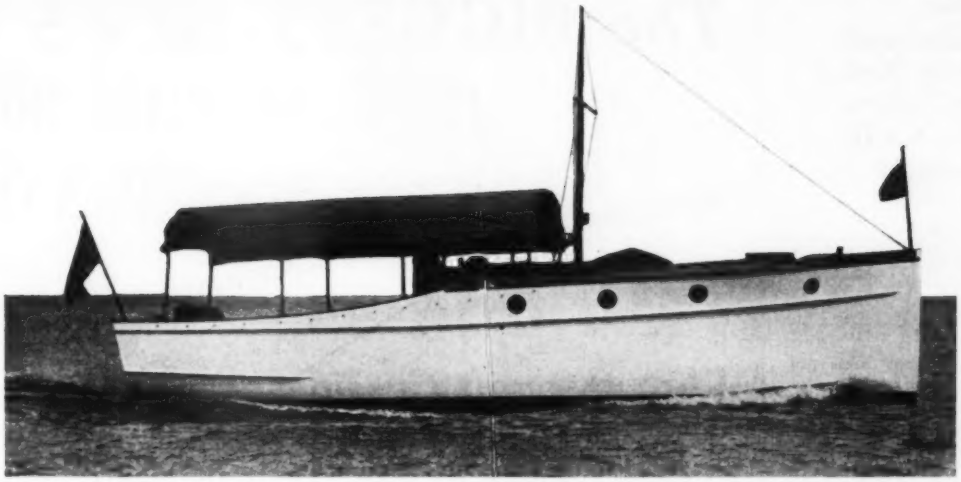
NODDING and bowing gracefully to the long groundswell, the staunch motor yacht Speejacks with Albert Y. Gowen, Chicago financier, Mrs. Gowen, I. J. Ingraham, and crew of six aboard, tied up at the Flamingo dock in Miami harbor, after completing the first circumnavigation of the globe ever made by a motor driven yacht.

Speejacks was due in Miami at 10 A. M., November 30, but a radio report gave her position as off Fort Lauderdale two hours later. By reason of weather conditions Speejacks had over-run Miami but came-about and was met by the fast express cruiser Shadow F just outside the Government cut into Biscayne Bay. Escorted by Shadow F and followed by Marinette and the yacht Surpass she proceeded to the Flamingo dock, where a great gathering of enthusiasts, including many prominent people from all parts of the United States, greeted her with a great out-burst of plaudits.

Miami, Fla., however, has the distinction of being the last American port touched by Speejacks, and the first at which she arrived upon her return to this country. This was an occasion which was featured by the splendid reception given to the Gowen party by the yachtsmen of Miami and Miami Beach. A cablegram had been received at Miami Beach from Mr. Gowen at San Juan, Porto Rico, stating that Spee-jacks would arrive in Miami at 10 a. m. Thanksgiving morning.

Miami Beach was the scene of much activity Thanksgiving morning where fine craft were assembling preparatory to meeting Speejacks at sea and escorting her to the Flamingo dock. The trim and fast Purdy cruiser Shadow F, belonging to Mr. Carl Fisher, and recently described in MoToR BoatinG, led the other yachts to a point inside the government cut. Here they watched for a glimpse of Speejacks out in the Gulf stream. Had it not been for Mr. Gowen's log becoming fouled, which threw Speejacks slightly off her reckoning, the famous yacht would have arrived on the dot. This was a splendid bit of calculation, considering that Speejacks came direct from San Juan to Miami without a stop in a heavy sea.

(Continued on page 81)



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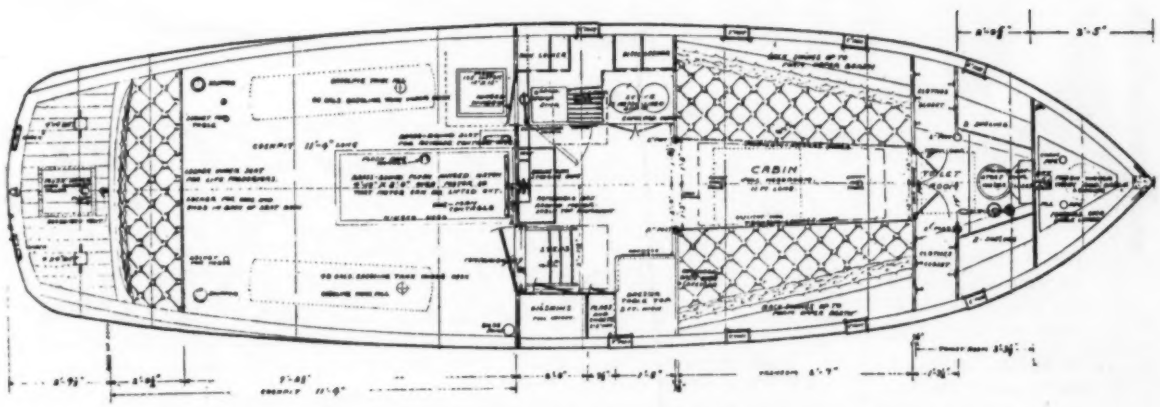

Everything you want in a cruiser—roomy accommodations, complete equipment, seaworthy and economical

We Challenge Any Motor to Follow the Caille Liberty

Goes through weeds like an eel

Submerged logs or rocks can't hurt it

Runs up on shallow beaches, without docks

No gears gives it more power and speed

Whatever your motor requirements, send this coupon to headquarters.

DEALERS: 1923 is a Caille year. Get the good news.

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Written by C. S. Cummings,
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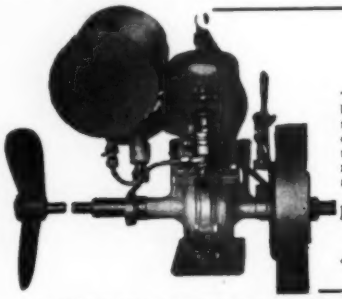
"I HAVE owned eight outboard motors of different makes. I bought them in pairs so at least one would be in order for my tenders from my yacht "Celerity." None of them gave me any satisfaction.

"This last motor of yours is a pleasing surprise—it goes every time. I take it on the automobile and stick it on my old skiff on the inland lakes here, and get the best of all the bass fishing.

"I think this praise is due the Caille Liberty, for up to now the mention of an outboard motor to me always produced the choicest and most high class cussing."

SOLD BY USERS—The Caille Liberty's performance is so remarkable that we don't need to boast—we are merely asking users to tell you their experiences.



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Power your small boat with this two horse-power wonder and laugh at the hard-to-start gasoline-eating engines, and the fellows who pull their arms out on oars.

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40 pounds of Pep and Energy

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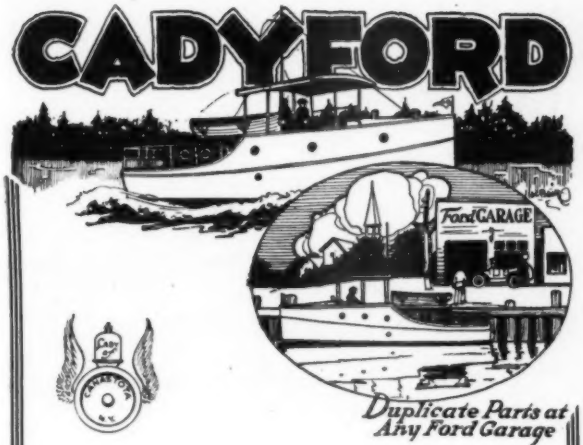
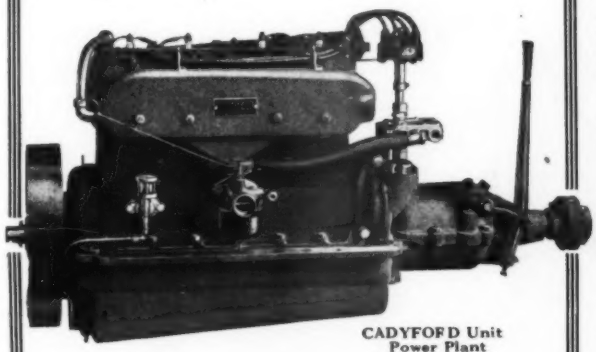


Duplicate Parts at Any Ford Garage

If you have use for a motor of this size you cannot afford to be without the "Cadyford." It offers you abundance of reliable and efficient power, and is remarkably economical in fuel consumption.

Yet it is the lowest priced motor of its kind on the market!



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The Cadyford represents highest quality material, and distinctive workmanship throughout.

It has water-jacketed exhaust and intake manifold, sight feed oil pump, oil float, extra large oil reservoir, Ford standard carburetor, Atwater-Kent or H. T. Magneto ignition, all bronze water pump, starting crank, coupling, priming cocks, spark plugs and wiring. An electric starter is furnished if desired.

There's a "Cadyford" dealer near you. Write us for his address, and go and see this splendid power plant.

Also 2 Cycle Motors from 1½ to 8 H. P., famous for 27 years.

C. N. CADY CO., Inc.

304 Centre St. Canastota, N. Y.

Pioneer Marine Engine Manufacturers

Established 1883

Speejacks Welcomed at Miami

(*Continued from page 78*)

Beating her way back through a heavy sea from a point off Fort Lauderdale, the Gowen yacht was met a little distance out by Shadow F and then escorted to the government cut in Biscayne Bay. Amid an exchange of many salutes Speejacks was escorted in a line of fine cruisers, including Marionette, belonging to E. C. Romph and Surpass, belonging to Colonel Theodore Dickinson. Waiting at the Flamingo dock were an enthusiastic gathering of well known Miami and Miami Beach people, who gave three lusty cheers as Speejacks slipped quietly up to the dock.

Mr. Gowen started on his remarkable trip in Speejacks from New York August 21, 1921, proceeded down the coast, stopping at Hampton Roads, Jacksonville, Miami and Jamaica, going from there to the Panama Canal. At the canal, Mr. Gowen made arrangements with the United States Shipping Board for a tow across the long and desolate stretch of the Pacific to within a short distance of Tahiti. Speejacks was too small to carry the required amount of gasoline to make this long hop under her own power.

From Tahiti she proceeded under her own power through the South Sea Islands to Samoa, from where she went to New Caledonia in the Fiji Islands. Australia was the next stop, where Speejacks laid in for one month. New Guinea was the next port and then along the north coast of New Guinea to the Hermid Islands—one of the wildest sections in the world. The Hermid Islands to Amboyna and thence to Madagascar, where Speejacks proceeded on to Bali off the coast of Java. Then from Java to Singapore and on to Sumatra from where she crossed the Indian Ocean—a distance of 4,600 miles—stopping at the island of Seychelles.

Great difficulty was experienced in getting gasoline at the Seychelles Islands and three thousand gallons were shipped to this point by sailing vessel for Speejacks. After crossing the Indian Ocean the Red Sea was the next body of water encountered and then the Mediterranean, where the Speejacks put into Cairo, Egypt. The party arrived at Athens from Cairo just at the time that King Constantine of Greece abdicated.

Naples and Rome were the next ports and Genoa the final port in Italy. In Madrid, Spain, a special bull-fight was staged in honor of the Gowen party, who were given a box of honor.

Speejacks sailed from Gibraltar on October 27 in a gale for the Canary Islands. On this trip the party encountered one of the worst storms recorded in that section in twenty years, causing a five-day delay. This was responsible for the reported loss of Speejacks at that time. During this run hatches were battened down and heavy seas crashed upon the deck, sweeping the vessel from stem to stern. There was nothing to do but ride out the gale, for there were no harbors along the northwest coast. The Cape Verde Islands were the next stopping point before crossing the Atlantic twenty-five hundred miles to Porto Rico.

From Porto Rico Speejacks came direct to Miami, Florida—the first port at which she arrived in the United States after her famous cruise. "It is interesting to note," said Mr. Gowen to the Correspondents of MOTOR BOATING, "that Miami was also the last port in the United States for Speejacks to leave."

When called upon to make a speech at the Thanksgiving Dinner in honor of the Gowen party, Mr. Gowen said that he would not make the trip again for a million dollars—but that he would not have missed it for five million or thereabouts.

One of the most dangerous situations in which Speejacks fell in the entire cruise, said Mr. Gowen, was off the coast of New Guinea, where they nearly ran out of gasoline—one thousand miles from Ambonna, in the Celebes Islands. This was but one of the many near tragedies of this great adventure.

It will be interesting to note the condition of Speejacks after so gruelling and punishing a cruise. The builders, the Consolidated Shipbuilding Corporation, indeed deserve a great deal of credit for the workmanship, materials, sea-worthy design—in fact everything that went into the make-up of this great yacht.

Upon carefully going over the boat from stem to stern, it was amazing to see the way in which every part of this staunch vessel had withstood untold strain. Such small details as the paneling showed no signs of giving or pulling apart. The entire vessel, in fact, did not show the ear-marks expected from a boat that had finished a 35,000-mile cruise. An almost incredible fact was the performance of her two model W 11-200 h.p. Wintons.

The two seven and one-half K.W. Winton generating plants gave similar service. In fact all the equipment in the engine room—including the Deloc automatic water systems—gave remarkable service. On general running, Speejacks made about two gallons to the mile in fuel consumption at a cruising speed of nine knots. Approximately 73,000 gallons of gasoline were consumed on the 35,000 miles. One gallon of oil was consumed to every seventy-five miles. The two motors were not touched all the way home from Cairo, Egypt.

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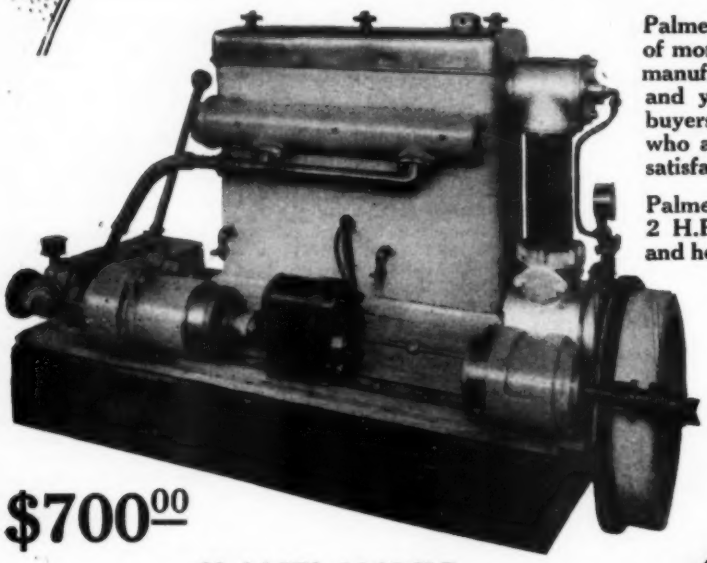

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Model VH, 14-16 H.P.

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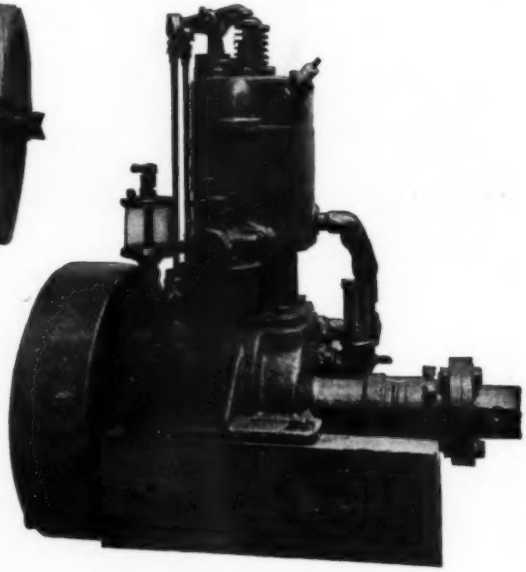
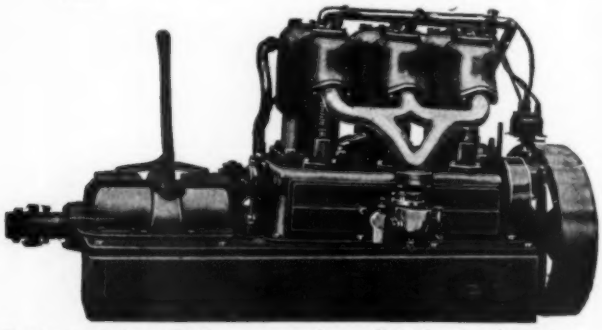
Palmer Engines are built for every type of boat, 2 H.P. to 80 H.P. High speed, medium duty and heavy duty.



$98.00 **Model YT, 2 H.P.**

A four cycle valve-in-head motor designed especially for yacht tenders and other small boats. Weight 95 lbs.



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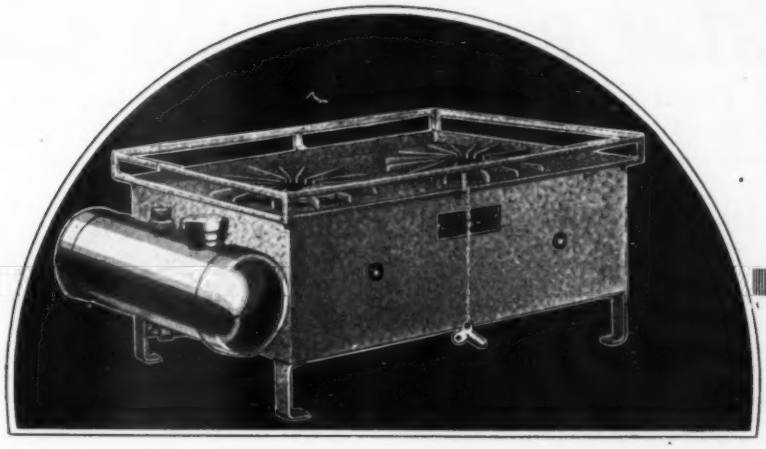

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Foreign Postage, 50 cents extra. **$2.00**

Volume II

How to Build Sixteen Ideal Motor Boats

This book gives complete information for building the following boats:
10-foot mark boat, 12-foot outboard motor boat, 12-foot speed boat, 12-foot bangabout,13-foot sea skiff, 16-foot sharpie, 18-foot runabout, 20-foot monoplane, 20-foot hydro-runabout, 20-foot knockabout, 20-foot tunnel stern, 22-foot V-bottom runabout, 25-foot V-bottom cruiser, 25-foot round-bottom cruiser, 28-foot cruiser (Consort II.)

Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

All of the Ideal Books are printed in large type on extra fine paper. They have been edited by Charles F. Chapman, Editor of MoToR BoatinG.

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Twelve Complete V-Bottom Designs

By William H. Hand, Jr.

Plans Prepared Expressly for MoToR BoatinG

This new book is the most valuable ever published for the amateur builder or anyone desiring to have a V-bottom boat built by his own builder.

The plans contain outboard profile, lines, inboard, construction and interior arrangement plans, sectional views and complete table of offsets. Accompanying each design is a description of the boat and a full set of specifications taking up step by step each feature of the boat's construction, how it should be built and the proper material to use.

Plans and specifications of the following boats are included: Edith, a 15-foot runabout; Jane, an 18-foot runabout; Katherine, 30-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 45-foot auxiliary schooner; Broncho, a 29-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.

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Twenty Easy-to-Build Motor Boats

By William J. Deed and others

A New Book of Small-Boat Plans and How to Build Them

These plans have been prepared especially for MoToR BoatinG and are complete in every particular. They are in detail enough to permit building from direct, either by the amateur or professional builder. No part of the boat's design or construction has been omitted or slighted.

Read the contents: Chum, a 16-foot Motor and Sail Craft; a 9-foot Easy-to-Build Dinghy; Nomad, a 34-foot Cruiser; a 9-foot Sharpie; Porpoise, a 20-foot Auxiliary Cat Boat; Kingfisher, a 14-foot Fishing Skiff; Shrimp, a 25-foot Hampton Boat; Flattie, a 16-foot Utility Boat; Dolphin, a 34-foot Tunnel Stern Cruiser; a 9-foot Dory; an 8-foot V-Bottom Tender; Penguin, a 25-foot Auxiliary Sloop, Sea Gull, a 41-foot Auxiliary Schooner; Whale, a 20-foot Cruiser that's a Real Cruiser; Tarpon, a 29-foot Raised Deck Cruiser; Alligator, a 28-foot Tunnel Stern Cruiser; a boat that will run in water little deeper than a heavy dew; and Mud Turtle, a 36-foot Stern Wheel Motor Boat. Rookie, a 20-foot Auxiliary Sloop, Nautilus a 40-foot Tunnel Stern House Boat; Victory II, the Cruising Champion; Complete Bills of Material for Building.

Book is printed in large type, on fine paper, and handsomely bound in cloth.

Price of Twenty Easy-to-Build Motor Boats **$2.00**
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Volume V Ideal Series

Piloting, Seamanship and Small Boat Handling

By Charles F. Chapman

This book has been published in response to repeated requests for us to bring out in complete book form the wonderful illustrated course in Piloting, Seamanship, and Small Boat Handling which has been appearing regularly in the issues of MoToR BoatinG since February, 1921.

Profusely illustrated with nearly 300 Cuts and Diagrams.

MoToR BoatinG's Correspondence Course proved to be the most successful and most popular feature ever undertaken by a boating magazine. Thousands of readers became better boatmen by studying this course. Now you will want it in permanent book form to keep aboard your boat for reference and guidance.

This course was prepared with an entirely new idea in text book or correspondence instruction. Instead of page after page of dry text matter with only occasional illustrations, it is composed mainly of pictures, drawings, photographs, charts and diagrams covering every situation and every point, with the purpose of each picture clearly explained by a concise and simple title.

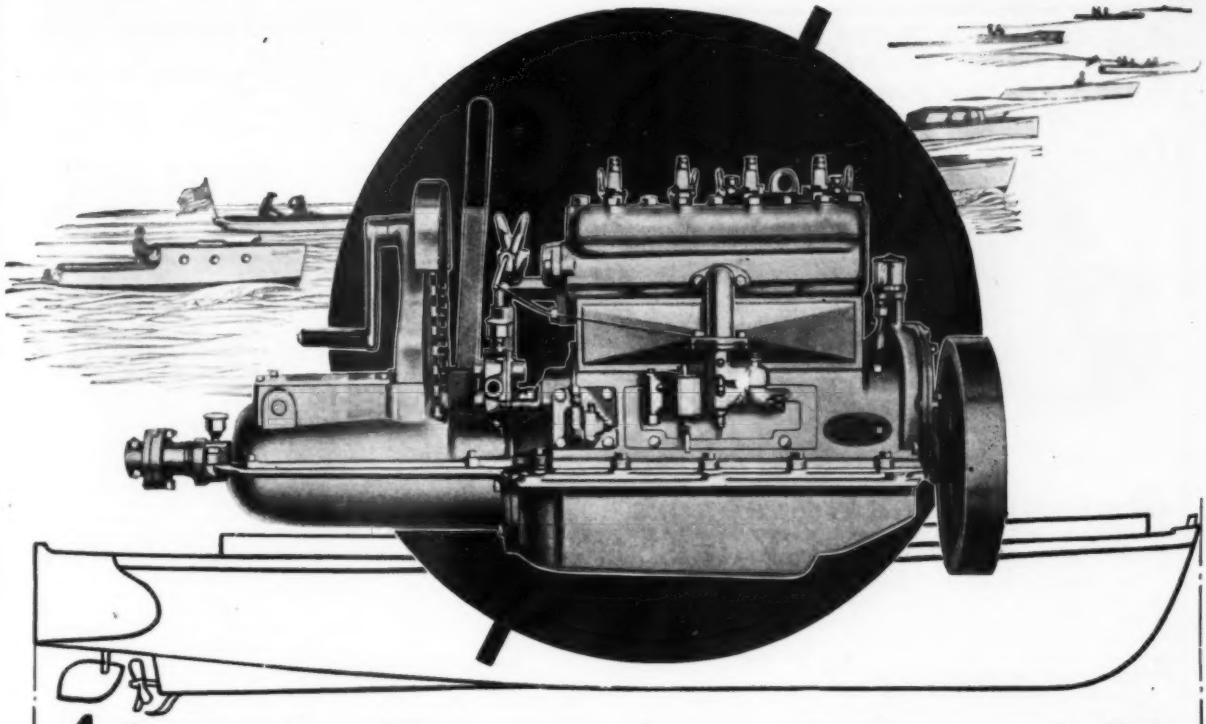
You will find this book more enjoyable and easier to understand than any text book you ever read. You will find it correct and authoritative because it has been prepared by experts with years of boating experience and every necessary reference at hand.

You will find it easy to read and easy to remember because each chapter is reviewed by pertinent questions which reveal your understanding of the lessons.

Price of Piloting, Seamanship and Small Boat Handling **$2.00**
Foreign Postage, $1.00 extra.
Note.—Volume V is not sold in combinations with the other books of Ideal Series.

MoToR BoatinG, 119 W. 40th St., New York, N. Y.

Advertising Index will be found on page 114



4 Cylinder Power—Smooth, Dependable
← for Boats *Under-30-Feet* →

ONCE you own a Universal you wouldn't go back to the ordinary motor on a bet. No more than you'd go back to the fuss, the muss and the grief of a two-cylinder engine in your motor car.

Pep? Quiet? Smoothness? Say, you've a new thrill—a new sensation coming to you—if you've never used a Universal!

Not a racing motor, yet it has records a' plenty. It's just a husky, gritty, simple power plant for the man who wants the limit out of the sport and a pinch hitter when it comes to dependability.

Atwater-Kent igniter or Bosch magneto. Self-starter—same as your car—if you wish. Eight distinct variations of assembly to choose from, but only one motor—accessible, economical—standard of the world for boats from 14 to 30 feet. Twenty-three years of engine building specialization stand behind it.

Send for catalog today and tell us what kind and size of boat you figure on.

Universal Motor Co.
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Manufacturers also of Universal four-cylinder 4 K.W. and 2 K.W. Electric Plants for LIGHTING BOATS, summer camps, homes, farms, etc. Ask for Bulletin 30.

Universal
4 Cylinder Four Cycle 9-12 H.P. Marine Motor

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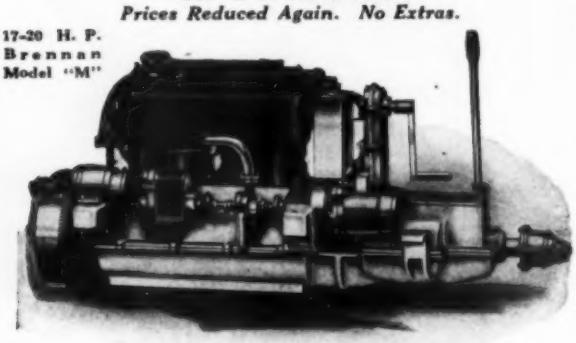
A New BRENNAN

At a New Price

Prices Reduced Again. No Extras.

17-20 H. P. Brennan Model "M"



Brennan Standard Motors Lead in Marine Value

The Brennan is a complete power plant with two unit electric lighting and starting system, and every other accessory built in. No extras required as our equipment embodies a complete outfit. This applies also to the Brennan Model B medium duty 25-35 H.P., and the Model B high speed type 35-40 H.P.

At our new reduced prices this completely equipped motor, including electric starter, costs you no more than an ordinary motor without equipment.

Write today for catalog and prices.
Order quick if you want early delivery.

BRENNAN MOTOR MFG. CO.

500 East Water St. Syracuse, N. Y., U. S. A.

Cable Address: "Binot"

Insist on having

JEFFERY'S WATERPROOF MARINE GLUE

In all the various grades it is the best for the money—the most serviceable. Pound for pound it will go further and do a better and more lasting job than any other make. Do not be deceived by cheap imitations; see that the trade mark is on every package.

Send for Booklets:

"MARINE GLUE—WHAT TO USE AND HOW TO USE IT"

AND

"HOW TO MAKE YOUR BOAT LEAKPROOF"

L. W. FERDINAND & CO.

152 Kneeland Street, Boston, Mass.

U. S. A.

Where Pirates Roamed

(*Continued from page* 11)

Climbed to the Meridian, "If only we could get off before it dies," I exclaimed for the fifteenth time.

"But," Jo reminded me, "we have to wait until that man inspects the boat. He may not buy her if he doesn't see her to-day."

"He may not buy her anyway. The chances are much stronger that the wind will fail before we start. These southwesterlies are rare, and we may not get another for a week."

Nevertheless, we waited. Our good friend Captain Fenton, who has sailed thousands of leagues to our miles, came out in a borrowed motor boat to inquire whether we had lost our senses. We explained and waited. Finally, when even Jo's patience was becoming exhausted, another motor boat headed our way, came alongside and disgorged the prospect. He remained ten minutes, spoke noncommittally, and shoved off. The oily film which coats the water of Cristobal Harbor had barely closed over his departing wake when our anchor let go its hold of the bottom, and in another ten minutes our sails were up and we were standing out to sea.

Standing nearly on our beam ends, for, miraculously enough, the wind had held despite our delay, and we were bowling across a wonderful sailing breeze. Outside the jetties we took the wind on the port quarter, and straightened up, but now we felt the heave of the restless Caribbean, and Jo realized for the first time what a bumpy place it can be. Yet every bump carried us nearer to our destination, and every wave that threatened to climb aboard over our stern was a reminder of the old days when the two Jo's and I rolled down to Colon.

Our first stop was scheduled for Porto Bello, but when we had sailed northeast for twenty miles and arrived off the entrance to the harbor, no Port Beautiful was to be seen. Instead there were sheets upon sheets of water ripping diagonally down from the sky and restricting our vision to fifty yards. We have since learned by observation and hearsay that it rains approximately 365 days of the year at Porto Bello, and from this I adduce the historical fact that Columbus discovered and named the harbor on a certain 29th of February.

Seeing nothing but water around, beneath, and above us, Jo and I huddled closer into our oilers, hove the yawl to and waited for a change of scene. Presently we headed in and a sudden cessation of the rain, as disconcerting as the downpour itself, uncovered the high, unmistakable entrance to the port.

"There," I told Jo, pointing to a series of terraces on the mountainside, "is where the Spaniards built their fort, and it was from this very spot that Henry Morgan's pirates directed their destructive fire. Isn't history wonderful?"

On the following day I learned that the terraces were created in 1910 when a quarry gang from the Canal Zone mined rock for the Colon breakwaters; but in the following moment my attention was attracted by a line of muddy, murky water ahead of us. "Washout up the line," I remarked, this time with more accuracy. Slowly, under a clearing sky, we worked in and let go anchor off the town.

It is on such an afternoon as this when a man's bones are chilled to the very marrow that he breaks the spirit of the Volstead act but we, having no liquor aboard, drank hot coffee and toasted the shades of departed Porto Bellians. It required skill and enterprise to discover this harbor, and courage to remain in it after they had found it, and we, dodging the drops of water from the furled mainsail, wished them happiness in their present occupations.

Somewhat to our surprise, the following morning dawned bright and almost cloudless, and we were able to see how really beautiful Porto Bello harbor is. Indented to the eastward between two commanding hills, it offers perfect protection from the prevailing trade winds, and as the head of the harbor is a mile and a half from the entrance, with a gradually shoaling bottom, it is quiet even with a westerly wind. At the northeast end is a shallow flat called Careening Cove, where, in the old days, the Spaniards heeled their vessels over to scrape their bottoms. Around the harbor, mountains tower in scattered profusion, and a final touch of picturesqueness is given by the thin wisps of smoke rising at irregular intervals from the fires of charcoal burners along the shore.

The town of Porto Bello, situated among the ruins of the old city on the southeastern side of the bay, figures large on patriotic Panamanian maps of the isthmus. In reality it is a small collection of huts and dilapidated wooden houses, quaint enough when seen from a distance, but mean and squalid as to detail. The American who is acquainted only with the trimness and the civic pride of our suburban or country villages can have no adequate conception of the character of such a town as this. It numbers some 1,200 inhabitants, and yet it does not possess a street that is worthy of the name. There are roads between the irregular rows of houses, but they jut up and down over centuries-old blocks of masonry, or run to mud where the straggling grass is worn thin by bare feet.

Not a wheel turns in Porto Bello. There is not a

(*Continued on page* 90)

Advertising Index will be found on page 114

MULLINS

16 Foot Special Steel Launch

3 H.P. Lockwood-Ash Motor
SPEED 9 MILES

Price $240

Equipped with Air-Tight Compartments Like a Life Boat

Can't Sink

Safe Quiet Speedy

This handsome new model Mullins Steel Launch is equipped with 3 H. P. Lockwood Ash single cylinder, two cycle motor and Mullins Silent Under Water Exhaust — complete, ready for operation. It's a real launch—(not merely a row boat with a cheap, inferior engine in it)—quiet, speedy and as safe as a life boat.

The Mullins 16 ft. Special is the most popular family pleasure boat ever designed. Thousands are in service. Hundreds of boat liveries are making money by renting Mullins Launches to the public by the hour or day, the same as row boats, because they are unequalled for safety, dependability, ease of operation, comfort and convenience.

DIMENSIONS

Length, 16 ft; beam, 4 ft; draft, 12 inches; length of cockpit, 11 ft. 4 inches, seats 8; net weight, 500 lbs; crated weight, 700 lbs; crated foreign shipment; 1000 lbs; cubic measurement, 210 cubic ft; code word, PEP.

Write for Complete Catalog — of Mullins Steel Motor Boats, Launches, Row Boats, Hunting and Fishing Boats.

MULLINS BODY CORPORATION

Boat Department **665 Depot Street,** **Salem, Ohio**

1923 Gray Motors Await You

Your boat and your pleasure is deserving of a better motor, one on which you can place the utmost dependence.

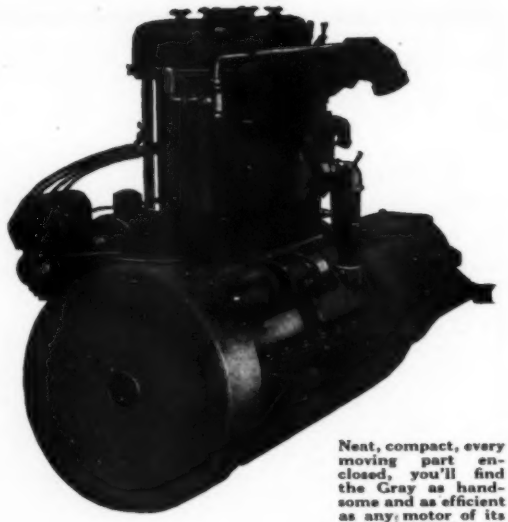
You not only get dependable service, but you get in a Gray, a smooth, quiet, clean, operating motor that tends to give you that pleasant feeling of relaxation you seek.

In small cruisers up to 35 feet—Runabouts 20 to 30 feet and work boats—the Gray 4 cylinder valve-in-head has given their owners better economy and more speed than any other type of the same bore and stroke.

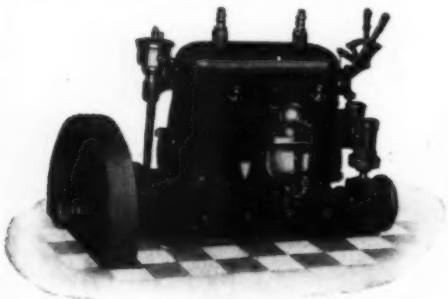
We don't ask you to rely entirely upon our statement but will gladly put you in touch with these owners.

What engine of equal cylinder displacement do you know of that will turn a 14″ dia. x 20″ pitch Hyde type wheel constantly at 1650 revolutions, or a 20″ dia. Hyde Wheel, 900 revolutions.

Note the rigid one-piece base with Reverse Gear enclosed. The gear is automatically lubricated with positive gear pump that lubricates all other intenal working parts of the engine—no grease cups or thick transmission oil used.



Neat, compact, every moving part enclosed, you'll find the Gray as handsome and as efficient as any motor of its size ever built, regardless of price



One of our most popular selling engines is the 2 cylinder 6 to 8 H. P.

Its *easy* starting and *dependable* operation coupled with its wonderful economy, recommends it to those who are considering a motor for a pleasure boat 16 ft. to 24 ft. or for fish or work boat up to 20 ft., requiring 6 to 8 H. P. For auxiliary power in sailing boats up to 35 ft. this little engine is a great favorite.

Oil filler is conveniently located on *top of the engine* with duct leading to Crank Case. Rocker arm shaft is hollow and automatically supplies oil to Rocker Arms. Oil is forced under pressure to the three main bearings, and to the connecting rod troughs.

In brief, the Gray Oiling System leaves nothing to chance. It is unfailing at all engine speeds, and all oil is kept inside the engine, and not thrown around the boat or on its occupants.

Due to the special design of the Cam Shaft, push rods and rocker arms, **scarcely a sound can be heard with the ear close to the engine.**

The smooth, quiet operation of the new Gray improved Valve-in-Head at all speeds from 200 to 2000 would compare favorably to an electric motor. It runs most economically on low grade gasoline and satisfactorily on kerosene.

Note The Big Crankshaft

The diameter of the main bearings are: Front, 2⅛″. Center, 2 1/16″. Rear, 2″. The lengths are 3⅜″, 2¼″, 2¼″ respectively. Crankshaft is 40-50 point carbon steel forging, heat treated and ground.

Special attention is given to the balancing. The shaft is put in rotative as well as static balancce on an Akimoff Dynamic Balance Machine, reducing vibration to a minimum and insuring long life to your motor.

Bosch Magneto with Impulse Starter, or Bosch two unit Starter and Generator is used.

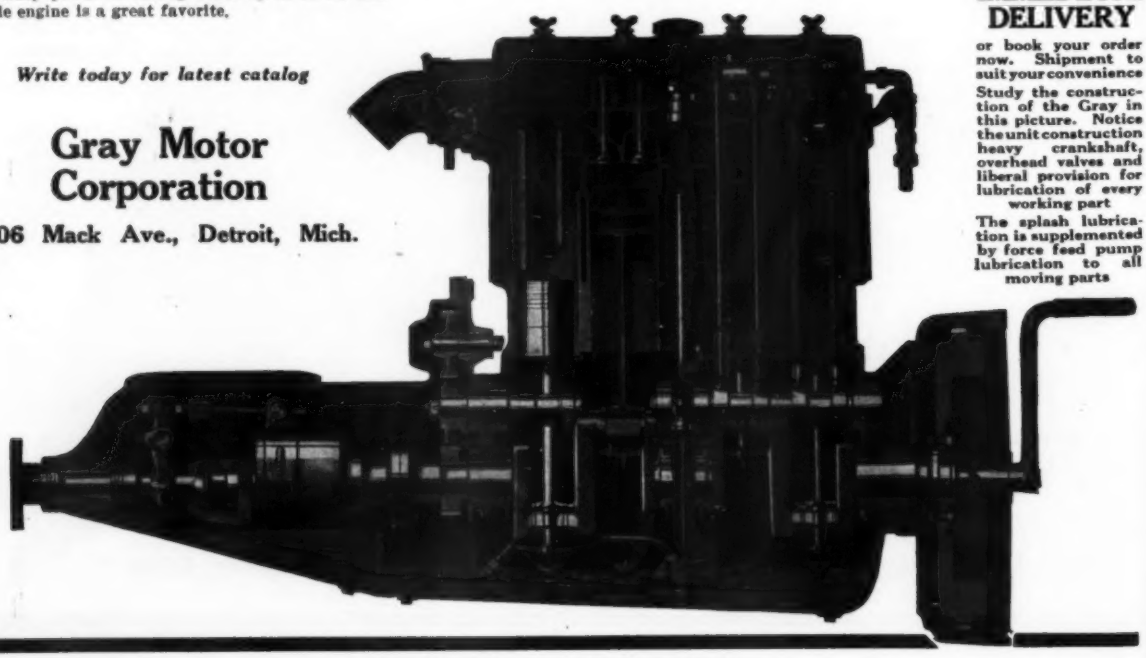
IMMEDIATE DELIVERY

or book your order now. Shipment to suit your convenience

Write today for latest catalog

Gray Motor Corporation

2106 Mack Ave., Detroit, Mich.



Study the construction of the Gray in this picture. Notice the unit construction heavy crankshaft, overhead valves and liberal provision for lubrication of every working part

The splash lubrication is supplemented by force feed pump lubrication to all moving parts

Advertising Index will be found on page 114

Speed away with a

Spinaway
Detachable
Rowboat Motor

It has a real rudder and will steer after motor stops, self-locking tiller, under water exhaust, vertically adjustable weedless propeller, automatic tilting, protected spark plug and battery or magneto ignition. It is guaranteed to give complete satisfaction.

Single		Twin
$75	Battery Ignition	$115
$85	Magneto Ignition	$125

Dealers

Here is an outboard motor you can sell knowing that it will deliver excellent service and make satisfied customers.

Exclusive Territory

Contract for your outboard motors with one house, making a complete line to meet the requirements of everybody and backed by 10 years of successful service.

Write to-day for Dealer's Proposition

SPINAWAY BOAT MOTOR CO.

FREEPORT, ILLINOIS

FOR MANY SEASONS
MOST IMPORTANT
TROPHIES
OF PRECIOUS METALS
HAVE BEEN DESIGNED
AND MADE BY

J. E. CALDWELL & CO.

PHILADELPHIA

JEWELRY-SILVER-WATCHES-STATIONERY

COMET TACHOMETER

Price
$27.00

Specialists in electrical equipment for motor boats and yachts. Comet Boat Lighting Plants, Generators 6-8 volt to 110 volt, Switchboards, D. C. Magnetos for make and break or jump spark. Tachometers, etc.

Write today for Bulletins and prices.

COMET ELECTRIC CO. 1241 St. Paul St. Indianapolis, Ind.

Where Pirates Roamed

(*Continued from page* 86)

carriage, not a go-cart, not even a Ford. Never a horse paws the ground of the shabby Plazuela, and donkeys come in from the interior only semi-occasionally. There is not a motor boat in the perfect harbor, and gasoline is an unknown quantity. Money is almost equal to gasoline in scarcity, and if there is a thousand dollars in the village it would take a tax collector a thousand years to assess it.

Contrast the present squalor, apathy, and poverty with the Porto Bello of two hundred and fifty years ago, when the famous Gold Road across the isthmus carried in the riches of the Incas. Then it was a fortified city, a place of teeming industry, with great ships lying at anchor in the harbor, soldiers swarming the streets, officers strutting in silks and fine linens, human cattle sweating under bags of precious metal. Heavy cannon, newly cast in the foundries of Spain, bristled from the walls of the city, and in powder magazines of heavy stone ammunition and shot lay stored for emergency.

Despite its power and might the gold city of Porto Bello was twice captured and twice destroyed, but despite the work of the destroyers the ruins still suggest the majesty of the old stronghold. Fire or the decay of years has accounted for the wooden carriages which supported the guns behind the battlements, but the iron guns themselves lie inside the crumbling forts as they have lain for centuries. Neither fire nor decay has robbed the ancient barracks of the dignity of its architecture, and if rank grass now grows where formerly the disciplined feet of soldiers trod, it only accentuates the difference between the majestic city of yesterday and the pitiful village of to-day.

Walking around the parapets of Forts San Jeronimo and Triana and viewing these evidences of departed glory, one wonders whether it was not something greater than mere strife that brought about the changes. The Spaniards came to the New World in the height of their energy and arrogance, and for a time conquered where they went. But human life is short and human nature inconstant in its purpose. Against these frailities of mankind was pitted the implacability of the tropics—the heat, the dampness, the fever, the relentless insistence of the vegetation.

Spanish civilization existed on the enslavement of blacks and Indians, and Spanish customs countenanced interbreeding with these subject peoples. As time went on the children of the tropics, in whose veins flowed the fecundity of all things tropical, became the masters of their conquerors. To the illegitimate union between white and black the Spaniards contributed no strength that outbalanced the fertility of the colored races. The laziness and inherent ignorance of the Panamanians gradually engulfed the industry and the initiative of the white race with which they had merged; and now, four centuries after the coming of the Conquistadores, the only impress of Spanish civilization is its language and its ruins.

Here and there at Porto Bello, as at other spots along the Main and in the West Indies, one sees a man whose face bears the features of the Castilian grandee. He has the high brow, the piercing eyes, the aquiline nose with delicate nostrils, and the firm, pointed chin. But his skin is black, and beneath his curly hair his thick skull contains a minimum of brains. Some distant ancestor of his held the lives of thousands in the hollow of his hand: he, the descendant, the inheritor, and the conqueror, paddles alongside in a dugout canoe and holds in his palm two eggs to exchange for a square of tobacco.

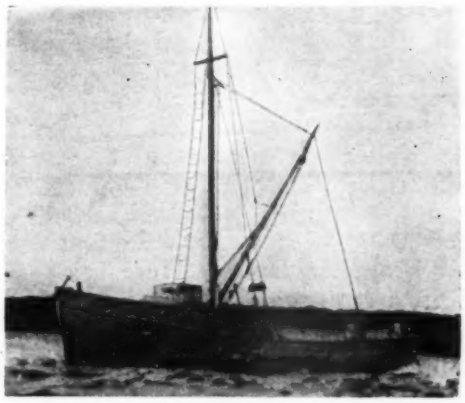
Attractive as it is, philosophizing of this sort should not be allowed to wander too far from the main point. Porto Bello was actually destroyed by the cutlasses and gunpowder of the buccaneers, and its only reason for existence ended when the gold and silver traffic ceased across the isthmus. Nevertheless, there is a wealth of ore in the mountains behind it which dwarfs the more readily negotiable gold of the Incas. Had the Spanish nation, whose capacity and rapacity were of unquestioned superiority, entirely exterminated the savages (as, in their fiendish cruelty, they came close to doing) or left them severely alone, its descendants might still count Porto Bello among the commercial harbors of the world.

Our stay in port was enlivened by an interest unassociated with the ruins. On the evening of our arrival a negro rowed alongside to borrow gasoline for his motor boat. He had come from Colon, he said, on his way to Nombre de Dios, and had run out of fuel when less than half way to his destination. It did not seem to me advisable to loan the precious liquid when we were bound for a country where it is unobtainable, so I negatived his request. I did, however, give him a quart of oil which he said he would use for priming purposes (!), and he rowed off with the remark that he would make out all right with kerosene.

After he had gone I told Jo that it is a wise motor that will run on kerosene, and she replied with equal truth that you can expect anything in the tropics. But the next morning's stillness

(*Continued on page* 96)

FRISBIE MOTORS
GIVE COMPLETE SATISFACTION



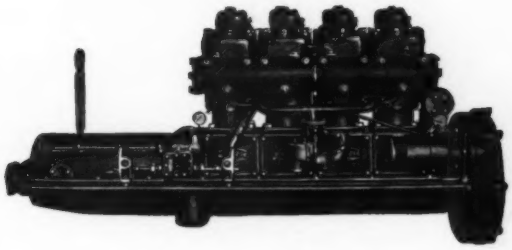
8 Knots An Hour on 2½ Gallons of Gas

SAMUEL S. EDWARDS of Montauk, L. I., writes:

"I am running my 38-foot boat, 11 ft. beam, 4 ft. draft, at an average speed of 8 knots per hour on 2½ gallons of gasoline an hour and 1 pint of cylinder oil in 12 hours' running. I am turning a 28 x 26 propeller at 525 revolutions to maintain this speed. The motor will turn the propeller at 725 revolutions and give me a speed of 9½ knots. It is giving me complete satisfaction in every respect.

"To any one interested, we will gladly send full particulars of the 13 Frisbie Models."

Model T Dual Valve



Mr. Edwards' boat is powered with a 50 H.P. Model T4, Dual Valve Frisbie.

The Model T Dual Valve Frisbies are made in three sizes:

Model T2, 2 Cylinders, 20 H.P. Model T4, 4 Cylinders, 50 H.P.

Model T4 Special, 4 Cylinders, 100 H.P.

Frisbie Valve-in-Head Motors are made in 10 sizes:

Models A and C, 1 Cylinder, 5 and 7 H.P.
Models B and D, 2 Cylinders, 10 and 16 H.P.
Models R and N, 3 Cylinders, 18 and 25 H.P.
Models E and F, 4 Cylinders, 30 and 40 H.P.
Models K and L, 6 Cylinders, 50 and 75 H.P.
All Four Cycle

Frisbie VALVE-IN-HEAD MOTOR

The Frisbie Motor Co., 7 College St., Middletown, Conn.

Agents for over 20 Manufacturers of Internal Combustion Engines for the Propulsion of Boats

Inverted V-bottom and Surface Propeller Boats.

SEA SLED

Hickman Patent in all countries.

Trade Mark Reg. U. S. Pat. Off. Trade Mark Reg. Canada

Your Ideal Boat

Single Surface Propeller Drive

Speeds in Excess of 30 M. H. P.

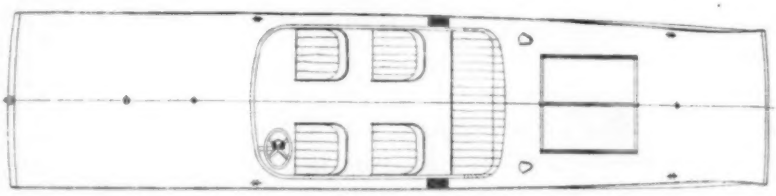
Enjoy that greatest of all recreations, motor boating, with the new 25 foot standardized Sea Sled Runabout, Single Surface Propeller Drive. Here is a boat representing all that goes to make up the perfect craft with which you can make of the oceans, streams, and lakes, highways smoother than any made by man. Run along at speeds around thirty miles an hour with perfect safety and comfort in open, treacherous waters, or explore those attractive bays, coves and streams, shallow and grass grown.

You can forget the boat and think only of your pleasure. All of your guests in one party, sociability at its height, ahead of the motor, away from its noises, odors, and vibrations, and in that part of the boat which has the minimum amount of motion and is the most dry.

A double planked mahogany creation of an appearance to do credit to its owner in the finest company, sturdy to withstand the hard demands of continuous use, its mechanical installation is simplicity itself to give unfailing reliability. The same hull may be had with either coupe or sedan type enclosures.

This model is in a production that insures a reasonable price and perfection of detail. Early deliveries to those who speak promptly.

This is just one of the remarkable boats we can offer under Sea Sled principles. We can take best care of your boating requirements, whether it be for a cruiser, runabout, or fast service boat.



Remember that the Sea Sled Dinghy, built in three sizes, 8′ 6″, 11′, and 13′, excels all other small boats as tender, rowboat, or outboard motorboat. Quantity production, reasonably priced, immediate delivery.

SEA SLED COMPANY, Ltd.

WEST MYSTIC, CONN.

Advertising Index will be found on page 114

Install a STANDARD

The REVERSE GEAR with the MULTI-CONE CLUTCH

There are other good reverse gears but there is no other gear with the MULTI-CONE CLUTCH, an exclusive Standard feature. Therefore no gear can equal the Standard because there is no clutch to equal the Standard MULTI-CONE.

This clutch takes hold like velvet, holds on to the load like a bull-dog and releases instantly when you throw the lever. It actually improves with use and is so easy to adjust that you can do it in a few seconds without any other tools than a screw driver.

"It wears in --not out"

The smooth engagement and tremendous holding power of the MULTI-CONE is due to its great friction surface. See the four large cones in the illustration and note that all the friction surface is at the point of greatest diameter, which increases the leverage and holding strength. These cones are much larger and sturdier than the thin plates used in a multiple disc clutch.

And then remember that the Standard is an enclosed gear, running in oil. This reduces wear and noise to the minimum. The case is absolutely oil tight. A ball thrust bearing is built into the case. This gear is easy to install and is built to outlast your motor.

Write today for details and prices giving size and power of your motor.

Model "C" Standard Multi-Cone
for
100 H.P. Hall-Scott
Entirely Enclosed
$100 COMPLETE

The Standard Midget
The smallest reverse gear made
Transmits ½ H.P. per 100 R.P.M.
A real Standard with Timken roller bearings and Multi-Cone Clutch.

STANDARD GEAR CO.

2819 Brooklyn Ave., Detroit, Mich.

LARGE SERIES

Model MAU 4¾ x 6½"
35-60 HP at 600-1200, $1275.00

Model MDU 5¼ x 6½"
40-75 HP at 600-1200, $1340.00

Model MDR, spec. high speed
100 HP at 1600, $1450.00

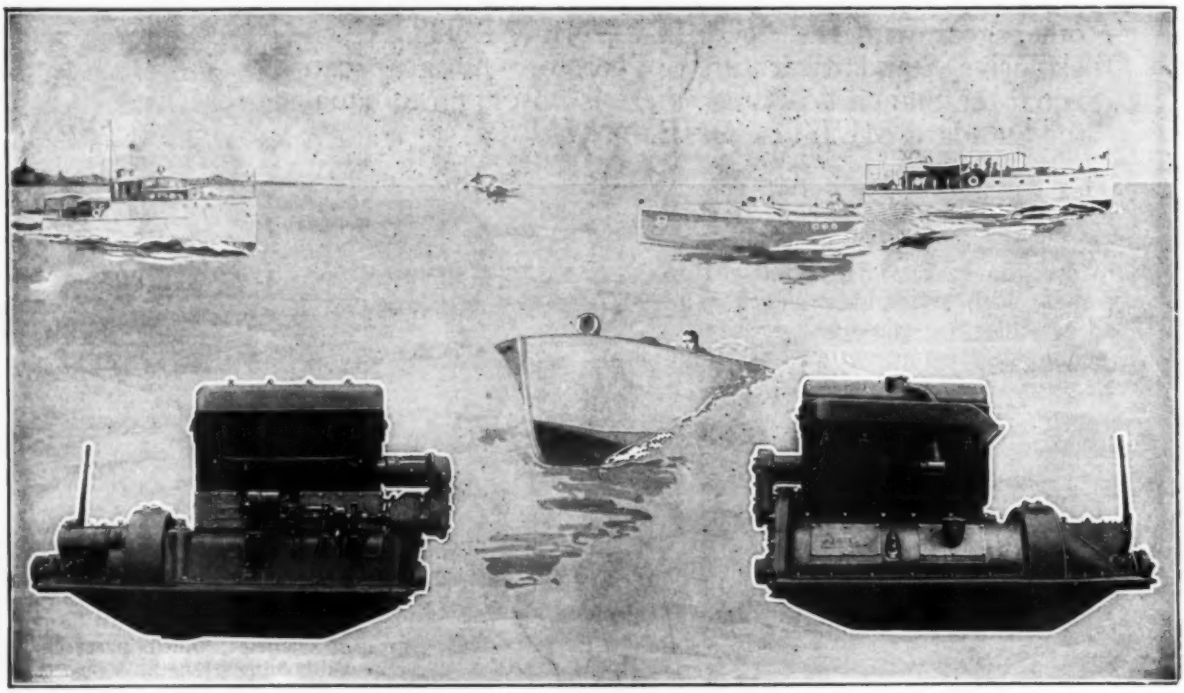
EXTRA RESERVE
STEARNS
MARINE ENGINE

SMALL SERIES

Model MGU 4¼ x 6"
25-45 HP at 600-1200, $1140.00

Model MHU 4½ x 6"
30-55 HP at 600-1200, $1190.00

Model MHR spec. high speed
60 HP at 1600, $1250.00



Quality Never Lowered to Make a Price

THE certainty of performance, the long and uninterrupted service for which the STEARNS is particularly noted, tell the boat owner of today what he most wants to know—the value that is built into the marine engine.

Such things foretell what he will be getting from his engine a year or five years and more after he buys.

They imply not only the lasting satisfaction which the STEARNS owner enjoys, but they also attest profound manufacturing skill, and shop practices which assure the quality to make a marine investment worth while.

When an engine embodies unusual engineering achievement; when it is the product of economical manufacturing; when it yields the unbroken service which STEARNS owners prize so highly, can more conclusive evidence of value be supplied?

Yet, to find an approximation of the qualities which give the STEARNS EXTRA RESERVE its high standard among fine marine engines, it is necessary to seek engines *in a much higher price range.*

The buying public today appreciates these things—how keenly, is affirmed by the growing interest in the STEARNS, and the feeling that, under the direction of Stearns' engineers, still better and greater things are to be expected.

Money Never Bought More in a Marine Engine

STEARNS MOTOR MANUFACTURING COMPANY
LUDINGTON, MICH.

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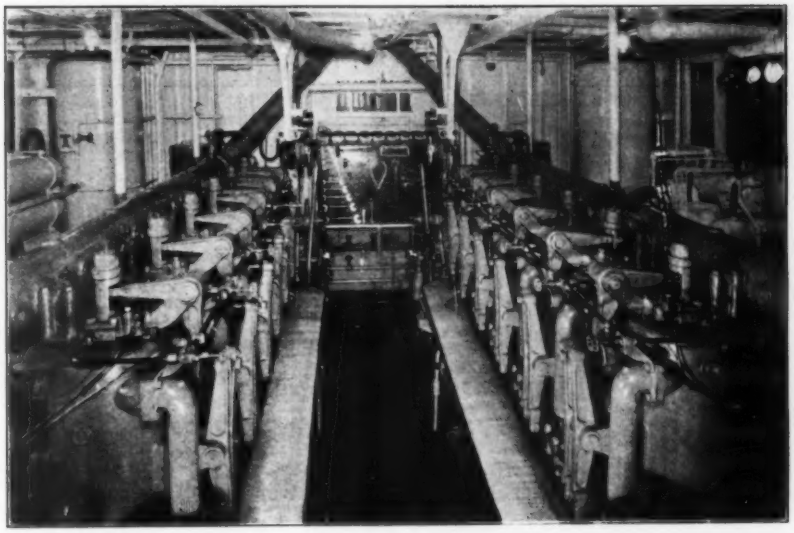
NELSECO



The engine room of ZALOPHUS showing the two six-cylinder 180 B. H. P. NELSECO DIESEL engines.

ZALOPHUS signalizes the development of a new type of pleasure craft. Larger and more able than the typical motor houseboat—far roomier and more economical to operate than a conventional yacht of its size—this houseyacht combines the comfort and accommodations of the former type with the seaworthiness and cruising ability of the latter.

NELSECO DIESEL power makes such a boat possible and practicable. It provides the compactness and cleanliness of the internal combustion type with the reliability of a slow speed engine. Its cruising range without refueling is much greater than gasoline and steam. The operating cost is about *one-third* that of a steam engine and *one-tenth* that of a gasoline engine.

NELSECO MARINE DIESELS are built in sizes of 120 B. H. P. and upwards. Latest bulletins and prices on request

THE NEW LONDON SHIP AND ENGINE CO.

GROTON, CONN., U. S. A.

The 125 ft. steel houseyacht ZALOPHUS recently completed by Consolidated Ship-Building Corp. for John Ringling of New York. Designed by Henry J. Gielow, Inc.

STEARNS-McKAY
MARBLEHEAD
ANTI-FOULING GREEN BOTTOM PAINT
FOR STEEL OR WOOD
STAYS CLEAN

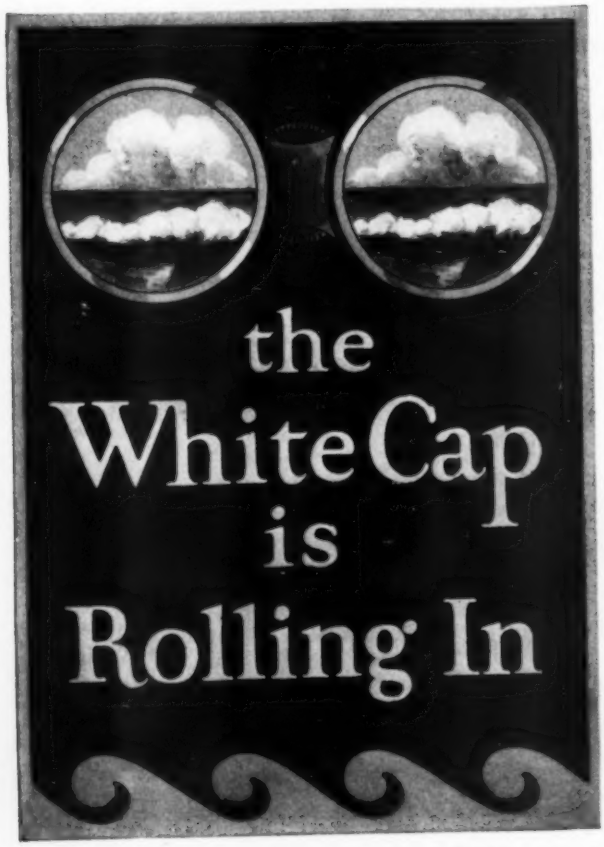
For Racing and Cruising Yachts and Vessels

Increases speed, saves fuel and large expense bills. A hard and peculiar slippery finish which lasts a long time. It pays for itself many times over by eliminating costly repairs, scraping and repainting work. It is a powerful wood preservative and anti-fouler, and is equalled only by Copper Sheathing as a protection against Teredos.

MARBLEHEAD FULL AND SEMI-ENAMEL
YACHT WHITE FOR TOPSIDES

Advice and consultation free on all painting and repair work.

STEARNS-McKAY MFG. CO
MARBLEHEAD MASS. U.S.A.



Where Pirates Roamed

(*Continued from page* 90)

was broken by the unwilling exhaust of a two-cycle motor, punctuated by pungent words in Spanish, and Jo and I agreed that our respective observations had been well made. First the motor ran and then it stopped. Then it ran again until the propeller was engaged, and then it stopped. This went on for some time while we ate breakfast and dried the sails; and as I was about to settle down for a quiet morning with my typewriter, we were hailed from alongside.

Again we were requested for the loan of a little gas. The kerosene, said the negro, had washed the oil out of his piston rings and he coudn't get his power. I was about to repeat my refusal when a burly white man, who had been sitting passively under the boat's awning, a cigar between his teeth, declared that if I would lend him the gas he would repay me as soon as we reached his diggings near Nombre de Dios. This changed the complexion of the suggested transaction, for we could afford to lend a little, or even a lot of fuel if we could be sure of having it repaid before we needed it. Consequently ten gallons were transferred from our tanks to the motor boat's, and after more sputtering and swearing the latter left our side and headed for sea.

The episode had spoiled the morning for writing, but it had given us an objective at Nombre de Dios, and on the day following we shoved off for the white man's diggings. He was a Mr. Nelson, a Britisher, managing a construction gang engaged in building a railway up to a manganese mine in the mountains back of Nombre, and with him, when we came to his island home, we found an American engineer named Onderdonck. Onderdonck was good enough to ask in a guileless way whether Hippocampus wasn't a boat, owned by a man named Loomis, that he had been reading about in MoToR BoatinG; and his question established us immediately as old friends. Later, when he and I had had a glass or two of Scotch together, he admitted that he had seen Hippo's pictures but had never read a word about her cruises. By that time we were still older friends, and I was quick to congratulate him on his discrimination.

After much urging the two men accepted Jo's invitation to come aboard for supper (we had been eating rather well this cruise) and responded with an offer to take us dynamite fishing the following day. This was a novel proposition, and Jo accepted with the remark that as we had been unsuccessful in every other form of fishing, dynamite was the only medium that she could still employ with pleasure. When I added that explosive fishing was my grand passion, the party was on.

As it was scheduled for the afternoon we spent the following morning inspecting Nombre de Dios, which lies a mile or so from our anchorage. Like Porto Bello it figured conspicuously in the annals of the Americas, and in it Sir Francis Drake contracted the fever that resulted in his burial at sea. Of the old Spanish town where religion was once piously administered according to the methods of the Inquisition, not a stone or brick remains, and the present village, because of the lack of ruins, is a close approach to nothing.

Passing by the existing church, which stands doorless, windowless, its broken roof letting in the rain on its barren interior, neglected by the negro population, we thought again of the inconstancy of humanity. Not so very long ago, figuring in centuries, men were tortured near here to embrace or support the Faith. Now the worst that can happen to sinners is to catch their death of cold waiting in an empty church for the Padre who never comes. If they could, the heathen who died on the wheel or in the rack might say that a great deal of blood had been shed to no enduring purpose.

Wrenching our thoughts away from ecclesiastical matters, past or present, Jo and I returned soon to the railway terminal and were greeted by Nelson. With him we went ashore, and while "Captain Trott," a Jamaican who earns his living by the hook, rowed around the edge of a coral reef, we three walked through lukewarm water to the likeliest hole in the coral. Onderdonck preferred the comparative dryness of the beach, but he joined us on the edge of the reef when the first shot was ready to go off. Captain Trott lay on his oars waiting to row in and scoop up the fish by the bucketful, and the rest of us stood by with great expectations.

The last submarine explosion that I had witnessed was the discharge of a depth bomb, when tons of water mushroomed into the air and the surface was left white with the bodies of dead fish. This, I told Jo, would be like it. Breathlessly we watched while Nelson dug the blade of his knife into the crumbling substance of the dynamite, capped a fuse, rammed it home, and debonairly struck a match. Anxiously I trained my camera on the spot in the water where the dynamite, its sputtering fuse leaving a wide arc in the air, had disappeared. Then, when my nerves were at the breaking point, the charge exploded.

There was a slight subterranean tremor, a ripple on the water's surface—and nothing more. No mighty upheaval of

(*Continued on page* 104)

Advertising Index will be found on page 114

Oh, Boy! Some Grin!

And no wonder—think of standing back to an approaching wave, jumping on your BALSINA "fish" just as it breaks and coasting to shore.

The BALSINA is made of Balsa wood,* covered with canvas, and though five feet long, weighs only about ten pounds.

(* *Balsa is the lightest commercial wood known—1/3 lighter than cork.*)

Grins!

Imagine the joy of the bather who cannot swim when he finds he can safely mingle out in deep water with his friends who can.

BALSA CHAIR FLOATS are as comfortable and restful as an arm chair, have a buoyancy capable of supporting in the water a person weighing more than 225 pounds, and may be propelled with hands and feet.

Balsa Buoyants *for* Water Sports

More Grins!

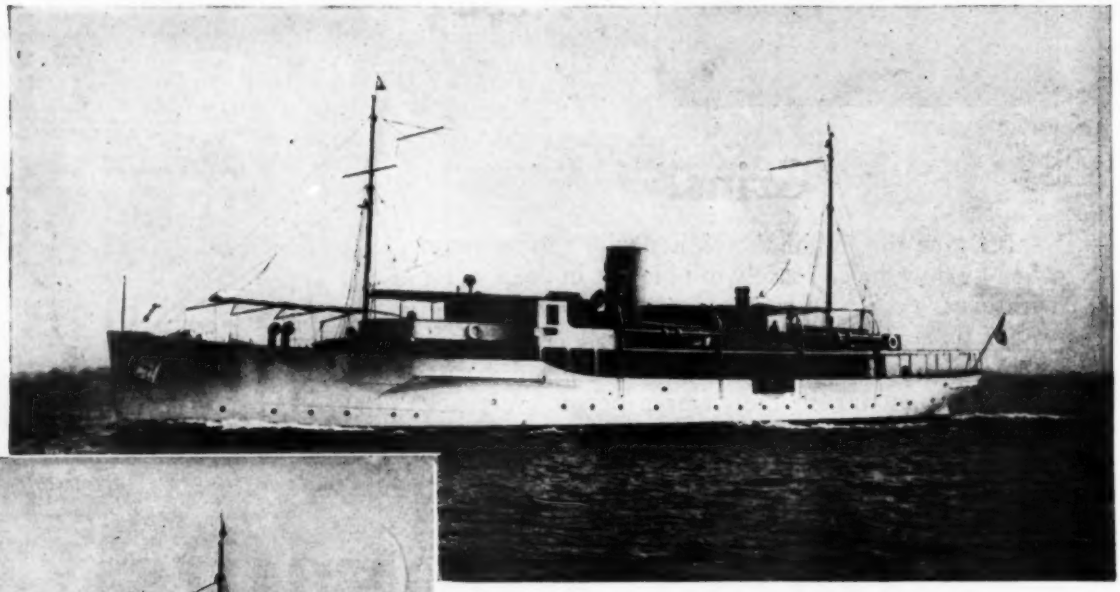
Did you ever stand on a BALSA AQUAPLANE in tow of a fast boat and enjoy the thrill of water rushing past you—and a ducking when you were not quick enough to shift your balance?

The BALSA AQUAPLANE is made of Balsa wood, covered with canvas, and has a remarkable buoyancy though weighing only fourteen pounds.

Ask your Sporting Goods Dealer for Catalogue
or write to

AMERICAN BALSA COMPANY, INC.
305 Vernon Avenue **Long Island City, N. Y.**

Winton



OHIO

Length:— 172 ft. Beam:— 26 ft. Draft:—11 ft. 6 in.

Sea Speed:— 12 knots. Cruising Radius:—9500 miles.

Builders:—Newport News Shipbuilding & Dry Dock Co.

Power Plant:— A pair of six cylinder Winton Diesel Oil Engines rated at 350 to 400 H. P. each, designed and built by the Winton Engine Works, Cleveland, Ohio.

Designers:—Cox & Stevens

Owner—Mr. E. W. Scripps, Cincinnati, Ohio.

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NEW ORLEANS, LA.—A. Baldwin & Company

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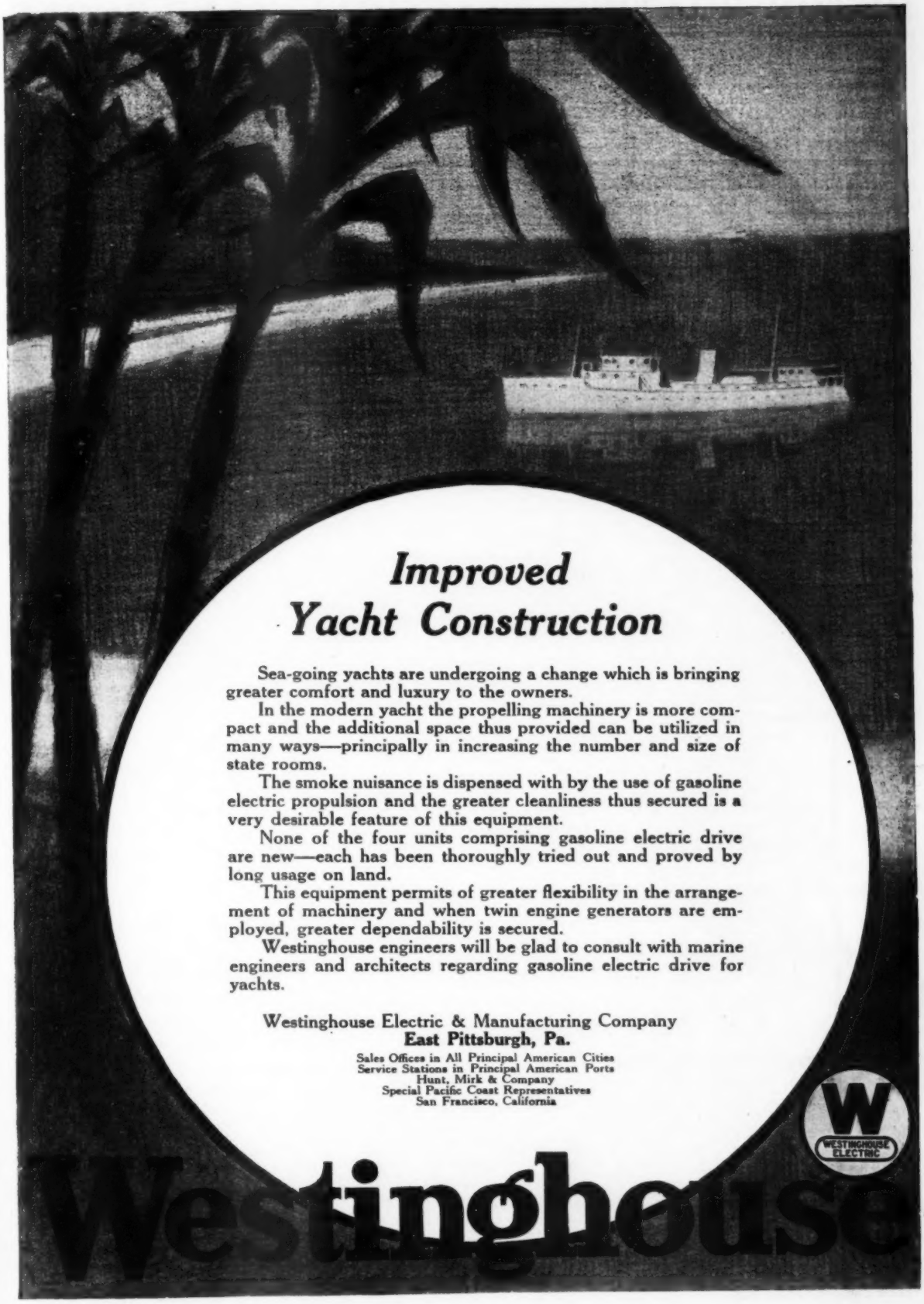

Improved Yacht Construction

Sea-going yachts are undergoing a change which is bringing greater comfort and luxury to the owners.

In the modern yacht the propelling machinery is more compact and the additional space thus provided can be utilized in many ways—principally in increasing the number and size of state rooms.

The smoke nuisance is dispensed with by the use of gasoline electric propulsion and the greater cleanliness thus secured is a very desirable feature of this equipment.

None of the four units comprising gasoline electric drive are new—each has been thoroughly tried out and proved by long usage on land.

This equipment permits of greater flexibility in the arrangement of machinery and when twin engine generators are employed, greater dependability is secured.

Westinghouse engineers will be glad to consult with marine engineers and architects regarding gasoline electric drive for yachts.

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Special Pacific Coast Representatives
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Westinghouse

MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom vs. Sharp Bilge; What are the Advantages of Flare? Raised Deck vs. Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantage of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The $1000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propeller-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Bearings for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it; Advice for the Beginner, Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Crtuise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

Practical Marine Motors

Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsuccessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed vs. Heavy Duty; Long stroke vs. Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers vs. Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside?

Practical Motor Operation and Maintenance

Volume 5.—One of the most valuable books of the entire set. Your motor's ills and how to cure them. This volume tells you how to adjust your carburetor, how to fit piston rings, how to remedy poor compression and a number of other things that will enable you to doctor your own motor. List of contents: Locating the Motor's Troubles; The Overheated Motor; Starting in Cold Weather; Overhauling a Marine Motor; How to Save Fuel; The Fuel Situation; Using Low Grade Fuel; How to Run on Kerosene; Supplying the Fuel to the Carburetor; Adjusting the Carburetor; Cleaning the Fuel Tanks; Cleaning the Gasoline Line; Stopping Up the Leak in the Tank; A Home-Made Gasoline Gauge; Carrying an Extra Supply of Oil; Mixing the Fuel and Lubricant; Remedying Leaky Compression; Killing the Carbon Jinx; Tool and Spare Parts to Carry; Removing and Replacing Piston Rings; Repairing a Leaky Cylinder; Grinding a Motor's Valves; Setting the Valves; Timing the Ignition System; Cleaning the Water Jacket; Making and Fitting a Gasket; Patching Up a Bearing; Straightening the Sprung Shaft; Truing a Bent Propeller; Removing the Flywheel; Separating Couplings and Pipe Fittings; Changing the Shaft Hole Location; Utilizing the Exhaust; Disposing of the Bilge Water; Heating a Small Cruiser's Cabin; Operating the Outboard Motor; The Clean and Quiet Boat; Charging a Storage Battery; When the Motor Stops Unexpectedly; Making a Unit Power Plant.

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Volume 6.—This volume is an especially valuable one. You will find in it points covering the care of your boat that you never dreamed of before. Whether you are a beginner or a finished expert this book will give you a better knowledge of the handling of your craft than you can imagine. List of contents: Putting the Boat into Commission; Fitting Out a Thirty-Footer; Suggestions for the Beginner; Refinishing Bright Work; Keeping the Wood Surface Bright; Putting the Boat Out of Commission; Laying Up an Unsheltered Boat; Hauling Out for the Winter; Covering the Boat for the Winter; Launching from a Wharf; Correcting Faults; Lengthening Out the Boat; Moorings and Buoys; Taking Steps to Safeguard the Anchor; What to Use in the Bilge; Preserving the Wood in Boats; Emergency Rigs for the Cruiser; Auxiliary Sails for the Cruiser; Providing an Emergency Rudder; Preparing for Southern Waters; Stopping the Troublesome Leak; Replacing a Broken Plank; Removing Broken Lag Screws; Raising the Boat's Stern; Clearing the Propeller; Protecting the Bow and Stern; Open Boat Sleeping Quarters; Ventilating the Cabin of Small Cruisers; Converting the Open Boat to a Cruiser; Making a Cover for the Open Boat; Preventing Electrolysis; Building a Club Float; A Floating Boathouse; Constructing a Landing Stage; Building the Marine; Keeping the Thief Out; A Place for Your Shore Clothes; Stowing for Life Preservers; The Winter's Alterations; What Changes Shall I Make; The Satisfactory Bilge Pump; The Pressure Water System; Making a Pelorus; Your Storm Curtains; Life-Saving Equipment; The Absent Owner's Anchor Light; Mounting the Reverse Gear.

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The books measure 7 x 10 inches and are handsomely bound in cloth. Each volume is fully illustrated and printed in clear type on fine paper

MoToR BoatinG **119 West 40th Street, New York**

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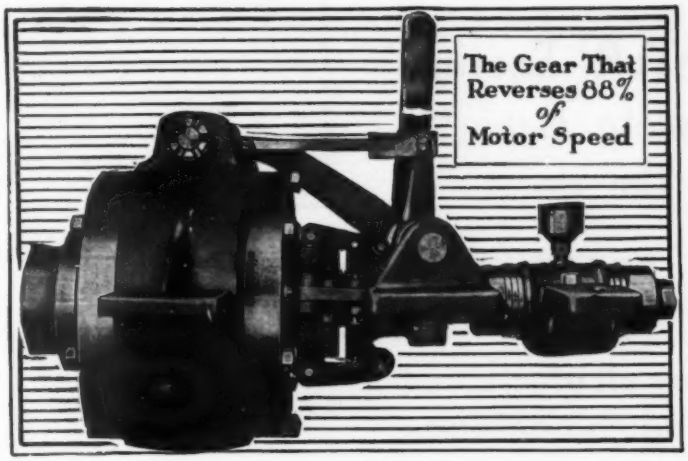

Why Mianus Motor Works Puts It Up to Old Man Joe

Paragraphs from a recent letter

"After using your Husky Gears for about three years in connection with the 2-cylinder, 3-cylinder, 4-cylinder and 6-cylinder (of 20 H.P. per cylinder) MIANUS IMPROVED DIESEL OIL ENGINE, we think it entirely appropriate to tell you that your Gears have operated with complete satisfaction.

"Their high ratio of reverse gives the quick backup at the full power of the engine, so highly essential for the satisfactory operation of all heavy duty engines, and their rugged, well designed construction, has made them dependable and well adapted to our engine in the many installations we have used them on.

"We are particularly careful that nothing but the very best material shall enter into the construction of our engines and, naturally, we are pleased with a gear that can be depended upon in making up our complete unit."

Yours truly,
MIANUS MOTOR WORKS INC.
(Signed) Geo. S. Watts
President

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Peerless Marine Motor Co.
Regal Gasoline Engine Co.
Vivian Gas Engine Co.
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REVERSE 80%-88% of MOTOR SPEED

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Street .....

City..... State.....

Gar Wood With Miss America and Miss Detroit Races on the Pacific

(*Continued from page* 13)

summers ago when the Championship of the World was at stake. Miss America and Miss Detroit V had little trouble defeating England's best at Cowes, but it may be a different story when they meet such craft as now owned by the racing enthusiasts of the Pacific, such men as Frank A. Garbutt, Dustin Farnum, Hal Roach, W. W. Paden, Ray Thomas, Joe Fellows, Alvin Frank, Fred Volger and others. Nowhere in the whole world has motor boat racing advanced so rapidly as in Southern California and even Gar Wood himself may have to open the throttle of his world beaters wider than has ever before been necessary in order to win.

Racing conditions on the Pacific Coast differ considerably from those usually found in the East. In the Far West, so it is reported, conditions of weather or sea make no difference with the racing program, the racing being held as scheduled, even in spite of the size of the sea which may be rolling in at the time, or other similar conditions which on the Atlantic seaboard or on the Great Lakes, are generally considered sufficient reason for a postponement. The courses themselves on the Coast are also laid out in more or less exposed localities while protected waters are the rule in the East. In other words, the Western boats are supposed to be more seaworthy and less of the racing freak than the craft from any other part of the country. How true this supposition is remains to be seen, but the Easterners believe their racing machines will stand any kind of sea that any other craft will and as far as the ability of the crews go they have no hesitancy in placing their money on the Wood-Smith combination.

The races at Los Angeles will be the first time that mile-a-minute craft from the East and West have ever met. Without doubt, the event will do much for motor boat racing. It will probably mean that Western boats will compete at Eastern regattas next summer—at Detroit, Chicago, on the Mississippi and at Buffalo.

The Easterners who will make up the crews will include, of course, Commodore Wood who will be at the helm of Miss America, and his reliable team-mate, Jay Smith, who will act as mechanician. Win Wood of Minneapolis will drive Miss Detroit V, and Bernard Smith will see that the revolutions per minute of her motors do not fall off any when this craft takes a dive into the long rollers of the Pacific. The editor of MoToR BoatinG is also along, acting as the Eastern representative on the Race Committee, and to get what pointers he can on Western racing methods and probably be a member of the crew of one of the boats in some of the events.

Miss America is the identical hull which won the Harmsworth Trophy in England. She has had new power plants installed, however: two Liberties, totalling over 900 horse power —which should give her more speed than she has ever shown to date.

In the British International Races for the Harmsworth Trophy, Miss America's best race of 38.1 miles was at the rate of 61.5 miles an hour; her best lap of 7.62 miles showed 65.1 miles an hour. Miss America's best work was done in the Gold Cup races at Detroit when she made a flat 70 miles an hour for a full 30 miles, and a 5-mile lap at 71.4 m.p.h. Her average in the mile trials (6 runs) was 76.655 miles per hour. Her length is 26 feet.

Miss Detroit V, or Miss Detroit VI, as she will be called on the Pacific, the other boat which Commodore Wood has taken out to the Coast, is his rough water bet. This boat has been entirely decked over, so that she now more nearly resembles a flush-deck cruiser than a racing boat. One of the races scheduled, calls for a course from Los Angeles aroung Catalina Islands and back. This will take the boats out into the Pacific for a full fifty miles. In the East, the annual race for cruisers to Block Island, is looked upon with fear by most yachtsmen, but Block Island isn't nearly as far out in the ocean as Catalina, and instead of ten miles an hour cruisers competing, there will be 60-mile-an-hour hydroplanes. It is for this race that Miss Detroit V has been especially prepared. Her 38 feet of length will be none too much for this race, and her 900 horsepower should provide reserve power enough to assure a new record being set up, no matter what the sea conditions happen to be.

In the British International Race in England, Miss Detroit V's best speed for a 38.1 mile race was 60.5 miles per hour and for one lap, 61.4 miles per hour. In this country Miss Detroit V's best performance is 61.9 miles per hour.

Not a great deal is known of the possibilities of the Western boats which will meet Miss America and Miss Detroit V. A great deal of secrecy and hard work has been going on since Commodore Wood announced that he would race at Los An-

(*Continued on page* 104)

Advertising Index will be found on page 114

Beautiful New Two-Color Folder

showing many scenes of Joy Riding with a Johnson Motor—now ready for mailing. Write for Free Copy today.

Build Your 1923 Vacation Plans Around the Johnson

No matter where you plan to go or what you plan to do, the whole family will vote **first** for a Lightweight Johnson Motor. It is one part of any plan you make that will never disappoint you. When you own a Johnson all you have to do is—

Find Water and You Have Found Fun

No other motor approaches the Johnson in performance and portability. It is a marvelous package of power. So light you can take it with you any time—anywhere. **Weighs only 35 pounds.** So powerful and responsive that you constantly find new thrills and the keenest satisfaction in use. An easy pull of the handy cord starts it humming quickly and quietly.

There is no destructive vibration—almost no noise. You move the spark and throttle levers as you drive your auto, to vary your speed at will. You loaf leisurely along or plow through the water at spray-throwing speed.

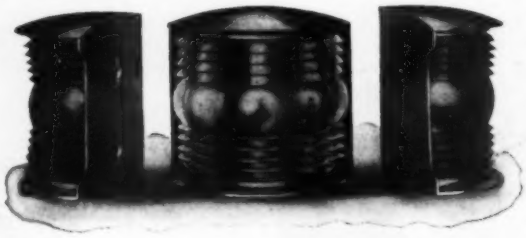
With the instant reverse (an exclusive Johnson feature) you stop at full speed in half the boat's length. No other motor is so completely and easily controlled. No other motor affords so much pleasure. No useless weight to lug, no batteries to bother. Has real float feed carburetor and built-in Quick Action Magneto. No oil holes or grease cups. Beautifully finished in polished Lynite and nickel. Fully Guaranteed. Thousands of Johnson Motors are giving vacation joy to thousands of American families. Any Johnson owner will be proud to tell and show you what his motor will do. Write at once for Free Folder and your copy of "What Others Say." See the many exclusive features found only in the Lightweight Johnson Twin.

JOHNSON MOTOR CO., 860 Sample St., South Bend, Ind.
New York Office, 120 Broadway, New York City

Johnson

DETACHABLE MOTORS for Boats and Canoes

The Lightest, Speediest and Most Durable Outboard Motor in the World



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THAT DO NOT FAIL

THE 1923

CARPENTER ELECTRIC

RUNNING LIGHTS

Two serious objections to the ordinary running light overcome. In our 1923 Improved Lights the lens rests entirely on yielding springs, no danger of fracture by contact with the rigid brass body.

A new lens is easily slipped into place without danger of breakage.

Send for description and prices.

GEO·B·CARPENTER & CO.

MARINE SUPPLIES

Sailmakers and Riggers

200 W. Austin Ave. Chicago

THIS IS THE TVEDT SILENCER

SILENCE your ENGINE EXHAUST without loss of power from BACK PRESSURE

THE ADJUSTABLE SECTION—Contains port openings, adjustable to your engine for effective silencing without loss of power by back pressure in the silencer.

THE BAFFLE PLATE —Mixes the engine exhaust gas and circulating water to cool and break up the sound waves.

THE ADJUSTING NUT—For adjusting the silencer to your individual engine when it is installed.

Made to be Adjusted to your Engine

WRITE FOR FULL INFORMATION

TVEDT-SMITH CO.
Worcester, Mass.

New York Office
103 Franklin St.

Gar Wood With Miss America and Miss Detroit Races on the Pacific

(*Continued from page* 102)

geles. Several local events have been held which were considered as elimination trials to pick the best Western craft, but it is doubtful whether the speeds given out showed the maximum the boats were capable of. There is no doubt but that Hurricane II, owned by W. W. Paden, is very fast. In a race on December 4, this boat won the 66 2/3 mile race on the open ocean at a speed reported to be 63.9 miles per hour, which is certainly a world's record for this distance. In mile trials held at Los Angeles, this month, Hurricane II's record was 65.7 miles per hour so there can be no doubt but that there is to be real racing when the best craft from the East and West meet late in December.

NOTE: The February issue of MoToR BoatinG will continue the complete story of the Los Angeles races. As the Editor of MoToR BoatinG is a member of Commodore Wood's party to the Coast, he will be able to give the readers of MoToR BoatinG some first hand information that is sure to make interesting reading.

Successful Correspondence Course Students

The names of all students who have submitted papers, for the Piloting Course, during the month of November are printed below:

Lesson No. 8: Harold P. Cahill, John Lang, L. R. Philpott, C. A. Philpott.

Lesson No. 9: William C. Butler, Harold F. Cahill, John Lang, Charles Nagel, C. A. Philpott, L. R. Philpott, J. L. Saegmuller, Roy E. Williams.

Lesson No. 12: L. R. Philpott.

Lesson No. 13: L. R. Philpott, L. F. Brower, Leslie L. Harrington, Donald C. McClean.

Entitled to Pilot Certificates:

L. F. Brower, Leslie L. Harrington, Donald C. McClean.

The following have successfully passed lessons in Dead Reckoning Course:

Lesson No. 2: Forrest D. Greene, Jr.

Lesson No. 4: C. Custer Robinson.

Lesson No. 5: L. L. Crosthwaite, Forrest D. Greene, Jr., W. B. Moores, Ian L. McKenzie, Robert E. Cunningham.

Lesson No. 6: Robert E. Cunningham.

Lesson No. 7: V. C. Baird, E. L. Belanger, Percy S. Benedict, Fredk. W. Salmon, W. A. Smelser.

Lesson No. 8: R. Andren, Percy S. Benedict, E. L. Belanger, Ian L. McKenzie, L. P. O'Keefe, Fredk. W. Salmon, Fredk. E. Smith.

Where Pirates Roamed

(*Continued from page* 96)

the depths, no sundering in twain of the coral reef on which we stood. And no fish. I told Nelson then and there that with me in the party he would have no luck in fishing, and although he fired four shots more he was at length obliged to agree with me. Captain Trott rowed away empty-handed, and we, who had adjusted the corners of our mouths for a fish supper, sat down that night to fried spring chicken which Nelson had bagged, not with dynamite, but with the more accurate powder and ball.

The next morning found us four days out of Colon and only forty miles along our way to the San Blas country. If we were to visit this interesting habitat of the Carib Indians we must be stirring, so with goodbyes waved to our newfound friends we got under way and stood over to Playa de Damas, where there is a trading station. There we picked up a case of gasoline in return for that which Nelson had borrowed of us, and there we made our first active dicker for the sale of Hippocampus.

Our little yawl has been in the family long enough to become one of us, and it seems like selling her into slavery to dispose of her at all. But it is beyond the question to sail her home, and as freight rates to the States seem prohibitive we have become reconciled to finding a kind owner for her on the isthmus.

Captain Bartling of the trading station is such a man; and when we had stated prices back and forth, all of them less than the little Hippo is worth, and only one of them at all agreeable to both parties, Jo and I shook hands with the future owner of Hippocampus and headed for the San Blas Gulf. We were off under sail and power on the yawl's last voyage of exploration, and we hoped, as subsequently proved to be the case, that it would be the most delightful.

Advertising Index will be found on page 114

KERMATH

"A Kermath Marine Engine Always Runs"

Get A New Kermath For the New Year—

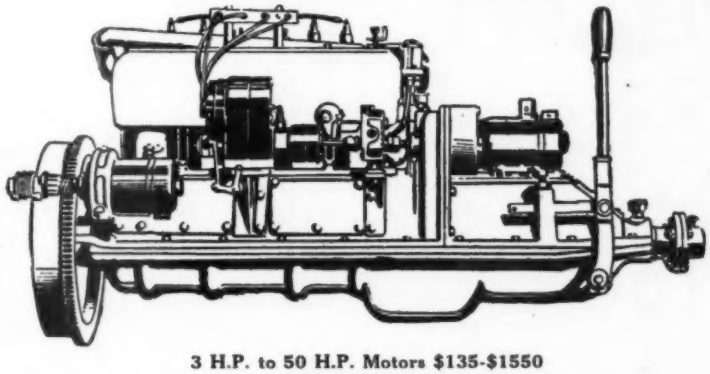
After all, 1922 wound up as a pretty satisfactory year for all concerned. Most of us enjoyed healthy and prosperous business. Kermath did, and we are glad at this time to express our appreciation and gratitude. Most of you who enjoyed a good last year should provide yourselves with some of the good things for this new year. How about your boat, for instance? Have you got one? If so, how about re-motoring? Say a splendid new Kermath! You know the fine reputation of this fine motor. Known in practically all the ports of the civilized world. The Kermath is always dependable and economical. There is one for your type of boat. Write us today for the facts. "Dept. D."

The new Kermath Models 35 and 50 will be ready for delivery the latter part of February.

Model 35—20 H.P. at 600 R.P.M.—35 H.P. at 1,000 R.P.M. Weight 900 lbs.

Model 50—50 to 55 H.P. at 1550 R.P.M. Weight 675 lbs.

This most complete line of marine engines is an ideal line for a dealer to sell. Write us for our detailed catalogue and territory.



Quality Right
Design Right
Materials Right
Workmanship Right
Prices Right

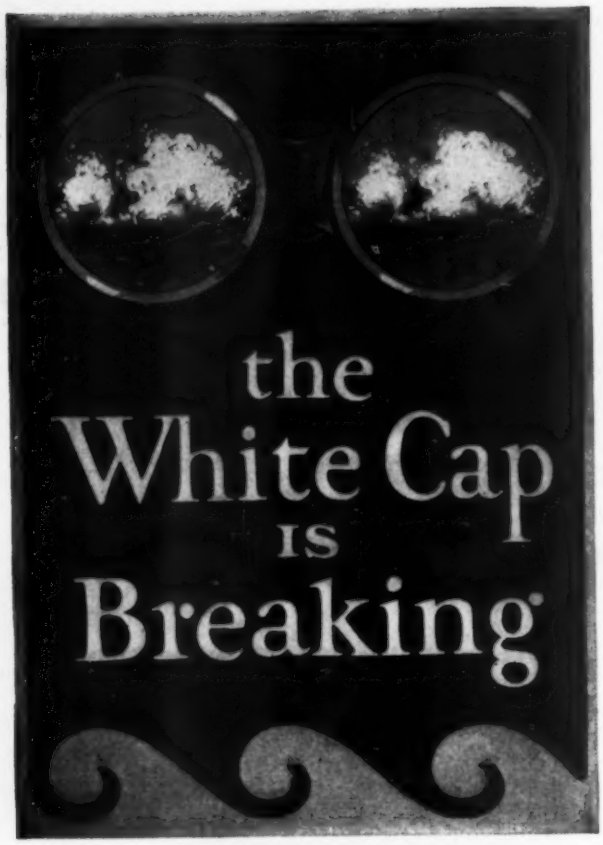
3 H.P. to 50 H.P. Motors $135-$1550

Four Cylinder Kermaths

12 H.P. . . . $470	20 H.P. . . . $535
16 H.P. . . . $500	40 H.P. . . . $1550

KERMATH M'f'g Co.

DETROIT 5880 Commonwealth Avenue **MICHIGAN.**



SYRACUSE
REVERSE
GEAR

The Only Reverse Gear with Built-in Rear Starter

A better gear that costs you less money. An all enclosed gear that includes a high-grade elevated rear starter Quality and price considered, the best reverse gear value offered to-day.

The only reverse gear on the market that includes a rear starter built in as an integral part of the gear. All ready to be attached to your engine with a minimum trouble and expense for installing. Open gears at correspondingly lower prices.

For 100 h.p. Hall-Scott

"You will find the Syracuse Gear ideally suited for the purpose, and the price is right. We build Syracuse Gears to sizes from 10 H.P. to 100 H.P.

Write today for catalog and prices

Syracuse Gear Co.
Syracuse, N. Y.

Anita, a Dandy Little Runabout

(*Continued from page 32*)

CHINES: These are to be prepared from 1⅝ by 1¼-inch clear yellow pine. The bottom and sides are to be rabbeted for 7/16-inch planking. Either plow or saw the outside rabbet ⅝ inch deep by 7/16 inch, allowing a margin below and rabbet after the side is planked and the boat turned over. Fasten with 3/16-inch bolt on side and bottom through frames and screw fasten to a knee at the stem and on each side of the transom. If hackmatack knees are used, through rivet the chine to the frames.

CLAMPS: These will be of ⅝ by 2-inch yellow pine, let into the frames and screw fastened to them and also to a 2-inch breast hook at the stem, which should be of oak or yellow pine.

ENGINE STRINGERS AND BED: There will be a 1-inch spruce or pine stringer extending from Station No. 3 to No. 8. This is to be checked over floor ties and through bolted with ¼-inch galvanized bolts. The stringer will form the floor level in the cockpit. The engine bed will be of 1¼-inch oak or ash, checked over the floor ties and through bolted to them as well as to the stringers. As designed the stringers are spaced for a single cylinder Kermath motor of 3 h.p. For other motors these should be so spaced that the motor will set in between properly. The engine bed should then be aligned and fastened.

PLANK STRINGERS: These are to be of clear yellow pine 7/16 by 1⅜ inches on the sides and ½ by 1⅝ inches on the bottom. They are to be let into the frames and securely screw fastened. They are also to be spaced approximately as shown on the drawing so that the plank seam will come in the center of the stringer.

FRAME-IN-GENERAL: The entire frame is to be neatly faired and trimmed, and the frames beveled in readiness for the planking. All joints are to be painted with lead paint before the final fastening. The frame shall also be painted or oil as the planking is applied.

PLANKING: This will be of either white cedar, white pine, butternut or cypress, ⅜ inch thick on the sides and 7/16 inch on the bottom. They are to be in as long lengths as possible. Butts are to be made on oak butt blocks not less than 8 inches long. They are to be either screw fastened throughout, copper riveted, or clout nail fastened to the stringers. If screws are used they should be 1-inch No. 8 into frames, stem, stern, keel, and chine, and all wood plugged. If plugs are omitted, use 1¼-inch No. 9 and ¾-inch No. 8 in the stringers. Brass screws should be used below the waterline and galvanized above, or if the holes are to be wood plugged, galvanized screws may be used throughout. Use a ⅜-inch Forstner plug bit for drilling these holes. Plank seams are to be about 3/32 inch and to be lightly caulked with spun cotton rolled in with a caulking roller and not pounded in. In planking the bottom the fourth or fifth plank may end on the chine, in this way allowing wider plank.

DECK BEAMS: These are to be ⅝ by 1¾ inches with the exception of Stations Nos. 3 and 5 which should be ⅝ by 2½ inches. The framing around the hatch opening to be ⅝ by 2½ inches also. All material to be of clear white wood or elm. The trimmer is to be ⅞ by 2½ inches and of the same material. Battens to be of ½ by 1⅜-inch elm or oak and let into the beams. This is to be faired and trimmed preparatory to the decking.

HATCH COVER: The frame for the cover will be of ¾ by 1½-inch mahogany, constructed to fit around the hatch coaming which should be ½ inch above the decking. The beams are to be ½ by 1¾-inch white wood cut out to fit over the coaming. Battens ⅜ by 1⅜ inches are to be let into the beams and the entire frame to be screw fastened throughout. It is to be covered with 5/16-inch mahogany preferably in two or three widths so arranged that the seams come on the centers of the battens. The covering is to be fastened with flush brass screws. The edges should be allowed to extend ⅜ inch and the corners and edges rounded and sanded off later. The cover is to be mounted with two 3 by 3-inch butts or fancy bronze hinges, with a suitable fastener on the opposite side and arranged with a suitable quadrant and lifting handle.

DECKING: This can be either natural finish or canvas covered. For a natural finish the covering board and center plank is to be of ⅜-inch mahogany. The balance of the decking to be ⅜ by 2¼-inch white pine or mahogany strips. Screw fasten the covering board and partner and use 1½-inch galvanized nails for the balance. Each strip is to have two fastenings at each frame. All holes are to be counterbored and wood plugged. If canvas is to be used the covering board should be of ⅜-inch mahogany. Battens 7/16 by 1⅜ inches spaced about 8 inches on centers should be let in flush with the beams. The decking of white pine or cedar boards can then be applied so that the seams come on the center of the battens. Nail fasten these to the beams and clinch fasten to

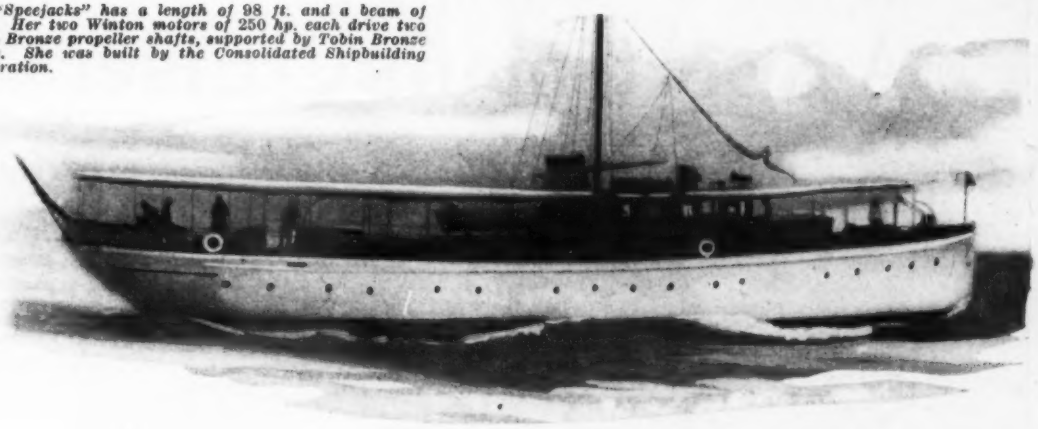
(*Continued on page 110*)

Advertising Index will be found on page 114

TOBIN BRONZE

REGISTERED U. S. PAT. OFF.

The "Speejacks" has a length of 98 ft. and a beam of 17 ft. Her two Winton motors of 250 hp. each drive two Tobin Bronze propeller shafts, supported by Tobin Bronze struts. She was built by the Consolidated Shipbuilding Corporation.



—and the Speejacks

ELSEWHERE in this issue of Motor Boating the heroic story of the "Speejacks" is told, the story of a 98-foot power boat tossed in heavy seas, ploughing through uncharted waters, buffeting terrible typhoons off the coast of China, and completing triumphantly, a voyage which lasted fifteen months.

Mr. A. Y. Gowen, who made the voyage with his wife, is an experienced yachtsman. It is significant that he equipped the "Speejacks" with two propeller shafts of Tobin Bronze, each 22 feet long, and had them supported by Tobin Bronze Struts.

For thirty years Tobin Bronze has been specified for the underwater parts of motor boats and yachts because it combines with great tensile strength and toughness, extraordinary resistance to corrosion.

Write for Booklet

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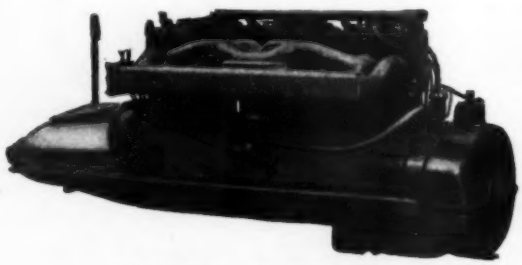
"The Motor that Crossed the Atlantic"

A Sportsman's Cruiser

WHEN Van Campen Heilner, Associate Editor of FIELD AND STREAM selected the engines for his new twin-screw Cruiser **Nepenthe II**, he chose SCRIPPS, because he knew that for dependability and power, they could not be excelled.

Mr. Heilner is a writer on outdoor subjects of reputation. He has cruised from Maine to the Spanish Main, from British Columbia to Mexico and **Nepenthe II** typifies everything that a real cruiser should be.

She is 47' O.A., 10' 2" Beam, 3' Draught and has a cruising speed of over 14 m.p.h. with a maximum of 18. She is equipped with two E- Sixes, has a fish well, Delco lighting system and Kelvinator ice machine, besides many other new and original features. Designed by J. Murray Watts and built by Chas. Leek of Atlantic City under Mr. Heilner's personal supervision, she will be used north and south along the Atlantic Seaboard and in the West Indies.



1923 PRICES

Electric Starters Included

D-2	10-12 H.P. 15-18 H.P.	$ 650
F-4	15-25 H.P. 30-42 H.P.	$ 750
E-4	30-45 H.P. 45-70 H.P.	$1250
E-6	40-60 H.P. 65-100 H.P.	$1750

A New 1923 Arrival

The wonderful success of the "E" series has developed an insistent demand for a motor of the same high quality in a smaller size. A new machine is announced, our Model "F-4," a four cylinder, high quality, high efficiency, four cycle motor, in two ranges, medium duty 15-25 H.P., high speed 30-42 H.P. Light in weight, unusually compact and substantial, it establishes a new niche in the motor world. The initial introductory price of the complete unit power plant, including electric starting and lighting is $700.00 F.O.B. Detroit—unheard of value in a HIGH QUALITY machine.

Let a SCRIPPS make your boat a better boat, whether runabout—cruiser—auxiliary —or commercial.

SCRIPPS MOTOR CO., 5819 Lincoln Ave., Detroit, Mich.

"Every Moving Part Enclosed"

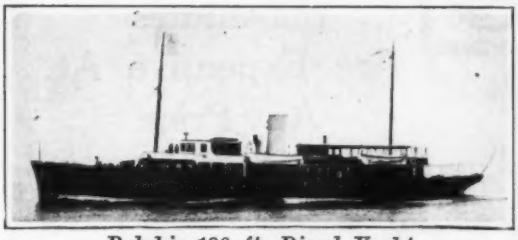
Advertising Index will be found on page 114

YACHT BUILDERS

THE facilities for yacht building afforded by the great plant of the Newport News Shipbuilding & Dry Dock Company are without equal.

We specialize in furniture, wood carving and decorating for yachts. We also have special facilities and skilled workmen for reconditioning and repairing yachts as well as larger vessels such as the S. S. Leviathan which is now undergoing reconditioning at our plant.

The location of our plant at Newport News on Hampton Roads gives us a harbor free of ice at all seasons and next door to America's favorite cruising grounds.



Dolphin-180 ft. Diesel Yacht

The furniture of Dolphin was built in our own shops.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

YACHT BUILDERS AND SHIPBUILDERS

Plant Located at Newport News, Va. on Hampton Roads

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Always Look For "the Name ROBERT BOSCH and the TRADE MARK

Bosch

Substitutes Are Expensive At Any Price

No other ignition system has the remarkable features of the old *original,* genuine

Bosch

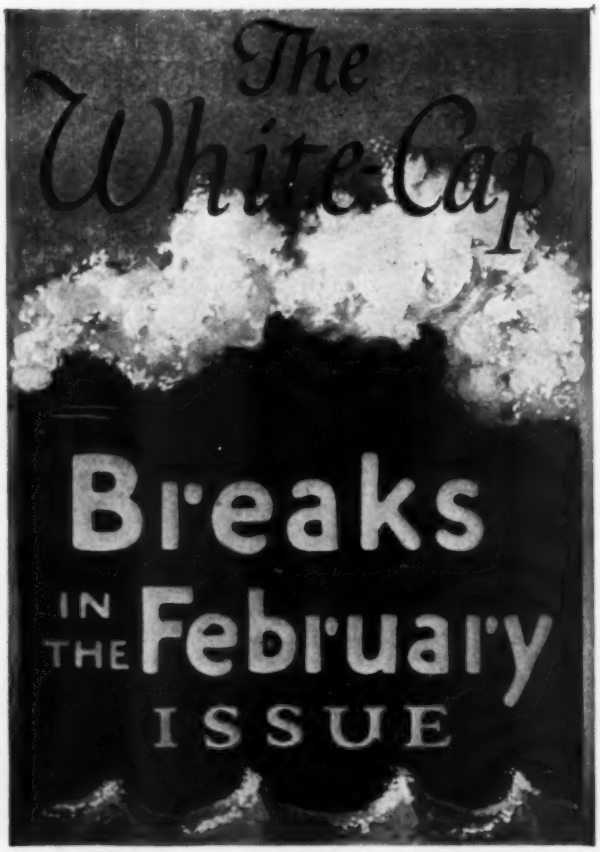
Be Sure Specify Robert Bosch

Send for "Bosch Facts" and "Bosch Victories."

Robert Bosch Magneto Co., Inc.,
Otto Heins, President

123 West 64th Street, New York

Several Hundred U. S. Service Stations—
Representatives the World Over



Anita, a Dandy Little Runabout

(*Continued from page* 106)

the battens. Sink nail heads well, and dress and sand. Apply a coat of lead paint, fill all holes with composition and lay a 48-inch width of AA drill on shellac or heavy paint. Stretching the canvas well and tacking closely on the edges. In laying a canvas deck fasten the covering board temporarily then apply the deck panel, remove the covering boards, lay the canvas and apply a coat of paint over same and allow to dry. Then fasten the covering board permanently in place. The hatch cover is to finish the same as the decking if strips are used, otherwise cover with 5/16-inch mahogany in wide boards, making the seam on a ⅜ by 1¼-inch batten let into the beams and screw fastened from the bottom. A canvas cover similar to the decking may also be used. Fasten a ½ by ¾-inch cleat about 2 inches long on the beams at Stations Nos. 3 and 5 to support the hatch cover.

COCKPIT: The coaming is to be 9/16 inch on the bulkhead, ½ inch on the sides, and ⅝ inch in back. This is to be shaped from mahogany, screw fastened and wood plugged. The bulkhead is to be made in three sections of 7/16-inch mahogany. The center panel is to be fastened to a ¾ by 2-inch cleat. The side panels are to extend to the plank stringers and are to have a ⅜-inch finishing piece on each side. Flooring in the cockpit will be laid thwartships and will be 9/16-inch white pine or cedar. The flooring next to the bulkhead should be made in three cleated sections, centered on the engine stringers. There will be a permanent floor under the seat followed by a removable cleated section, and again a permanent portion under the after seat with a cleat fastened to the end. The flooring will rest on the engine stringers and a support between the frames as indicated. It will have a ⅞ by 2½-inch seat riser on each side fastened to the frames at Stations Nos. 5, 6, 7, and 8. Seats will be either plain top or stripped and cleated. They are to be of 9/16-inch white pine and have a nosing of ⅝-inch mahogany. They should be made to be removable and fitted with screw fastenings. Seat backs will be of ⅝-inch mahogany and are to extend to the bottom of the coaming. Reinforce these with a cleat on the after side.

FENDER: This should be of 1¼-inch half round oak or mahogany and slightly tapered at both ends. It should be brass screw fastened and wood plugged.

FINISH: Hull to be thoroughly dressed and sanded and the seams lightly caulked with spun cotton followed by a coat of lead paint inside and out. All seams are to be filled with a composition made of dry lead and spar varnish mixed to the consistency of putty and well sand papered before it becomes perfectly hard. This should be followed by two coats of green copper paint up to the water line and three coats of marine paint above, light gray is suggested. It is also to have a second coat of lead paint inside, of the desired color. The decking is to be thoroughly cleaned up with seams of about 3/32 inch. Coaming, etc., is to be well cleaned and sanded. All mahogany is to be filled with best paste filler and if pine strips are used apply a coat of varnish to the pine panel before filling the covering board and center plank. When completed apply a coat of spar varnish. All seams are to be filled with Kuhl's seam composition, using black if pine is used and white for the mahogany decking. Depress the composition into the seams, using a 20d. wire nail with the end smoothed off. Apply two coats of spar varnish well sanded between the coats. All seats and bulkhead are to be finished natural, while the flooring may be either natural or to have two coats of lead paint of the desired color. If a canvas deck has been laid, as already specified, it should be well sanded and two coats of deck paint or enamel of the desired color applied. A light lead color is suggested.

HARDWARE AND FITTINGS: The stem will have a strip of ½-inch half round brass at least 5 feet in length and screw fastened every 6 inches. A special combination bow chock and a standard 2¼-inch bitt with flag socket combined should be fitted. One 3-inch cowl ventilator forward and two 5-inch standard cleats for the sides and one 7-inch cleat on the stern deck. Two 4½-inch chocks for the stern deck also. One standard stern flagpole socket of the flush type. Piano hinges for the hatch and 1¼-inch, 18 gauge binder fastened with ovalhead brass screws. One brass lifting handle and one standard 9-inch hatch quadrant. The steering gear, W. S. Hall Co. 14-inch standard steerer of the drum type. This should have 2-inch sheave cheap block on each side fastened to a wooden cleat in direct line with the lead. There will also be a similar block under the after deck in direct line with the tiller. Fasten a cleat extending from side to side immediately under the pillow. Saw out radius so the tiller will swing and bolt blocks on each outside end of the cleat to lead to the center of the slide and forward. Bore holes through frames for the leads. Cable to be of ¼-inch bronze and to be fastened to the tiller

(*Continued on page* 112)

Waterproof
Shockproof
Breakproof
Price $1.25
All Threads

↖See that protecting hood ←and that waterproof cap

RAJAH SPARK PLUGS

Waterproof Type

IF you have an open boat or an outboard motor, here is the spark plug that will give you the best service and the greatest motor reliability. It is built especially for use in exposed marine motors where ordinary spark plugs can never give satisfaction because they are quickly put out of commission by rain, spray and dampness.

When you use a Waterproof Type RAJAH PLUG you can drench your motor without affecting the regularity of your spark—without missing a single explosion. Notice that the outer end of the porcelain is protected by a molded Condensite cap. Over this is a flexible rubber nipple, covering the terminal and extending well over the insulation on the cable.

Under all this protection is standard RAJAH construction—the same excellent design and materials that have made steadfast friends of RAJAH users for more than 20 years. Try a set of RAJAH Plugs and you too will be a friend for life.

Standard Rajah Plug $1.00 **Giant Rajah Plug $1.25** **Waterproof Rajah Plug $1.25**

Complete with Terminal

If your dealer doesn't sell genuine Rajah Spark Plugs, order direct from us stating thread wanted or mentioning make of motor. To get the best motor efficiency, use a real Rajah Plug in each cylinder.

Equip your spark plug cables with the famous Rajah Terminals. Fit all plugs, made for all size wires. A Rajah Thumb Nut Terminal included with each Rajah Plug, without extra charge.

Rajah Solderless Terminals can be installed on your wires in a few seconds, without solder or tools. Send 15c for sample.

Mfd. by RAJAH AUTO SUPPLY CO., Bloomfield, N. J., U. S. A.

Anita, a Dandy Little Runabout

(*Continued from page* 110)

with clamps. Rudder brackets and the sliding tiller are to be of bronze. Shaft log of a special no-bind type. The strut of a special type and of bronze. This can also be furnished with protection for the propeller. These fittings are made especially for this design by the H. H. Ericson & Co., 3027 N. Western Ave., Chicago, and can be secured from them at reasonable prices.

GASOLINE TANKS: These should be of galvanized iron, 7 inches in diameter and 36 inches long, fitted with a 1¼-inch bushing on the top and a ⅛-inch outlet at the bottom. This is to be securely fastened under the deck as indicated with cleats or straps and connected with a deck filler plate by a short length of 1¼-inch pipe.

MOTOR INSTALLATION: The motor is to be a single cylinder 3 h.p. Kermath. It is to be properly aligned, and coupled to the shaft, of such size as recommended by the manufacturer. The exhaust is to be carried out through standard fittings, or copper or steel tubing. It should extend through the side of hull or to the stern under the flooring. Tap into the manifold and exhaust pipe and connect with a ⅜-inch copper tubing and material fittings. Water piping to be of brass with a valve on the sea-cock and hose connected to the pump. The water discharge line should be connected in a similar manner. Gravity supply should be used for gasoline service to the motor. The carbureter should be connected with the tank by 5/16-inch copper tubing with an S.A.E. valve in the line. Controls for the engine should be carried to the steering wheel. A switch and necessary instruments are to be mounted on the bulkhead. All wiring is to be properly executed and such sizes used as are recommended by the manufacturer. The propeller should be 12 inches in diameter and of such a pitch as is recommended by the motor manufacturer.

EQUIPMENT: Kapoc filled cushions or pillows for the seats; four life preservers; two 3-inch round fenders; one approved fire extinguisher; one fog horn; one whistle, mouth type permissible; one canoe paddle; one boat hook; one stockless or folding anchor, 15 or 20 lb. in weight; 60 feet of ½-inch manilla line spliced to the anchor shackle; two painters of 25 or 30 feet in length and 7/16 inch diameter of manilla or cotton; the regulation combination bow and stern lights; two copies of the pilot rules; and such tool equipment as is furnished with the motor.

NOW IS THE TIME
to Get Rid
of That Annoying

Vibration

While your craft is laid up for the winter, ship the crankshaft and flywheel to one of our service stations. It will be perfectly balanced at a cost so moderate that no power boat owner can afford to put up with the distress of vibration caused by lack of balance.

Remember the story of Rainbow I.

Write for details and cost of our balancing service.

WE SOLVE VIBRATION PROBLEMS
Trade Mark Registered

Vibration Specialty Co.
N. W. AKIMOFF, Pres.
Harrison Bldg.
Philadelphia, Pa.

Complete Radio Receiver for the Small Cruiser

(*Continued from page* 27)

engine, as the vibration will break filament or shorten life of tube. When cruising the tube is removed and placed in a small cardboard container lined with cotton batting. Never use more current on the tube than is necessary to obtain a loud signal. Before removing tube from socket, unscrew miniature lamp from its socket, which opens the 22½ volt B batery and eliminates the accidental burning out of the filament due to accidental contact with this circuit. This tube is rated at approximately one ampere; and with a 60 ampere hour storage battery, 60 hours of service would be obtained. If a 100 ampere hour storage batery is installed the proportionate number of listening hours will be increased to 100. For recharging, the local storage battery agents charge fifty cents, which is not prohibitive, or possibly the electrical generator on the boat will have sufficient capacity for this work.

Various parts on the illustrations and diagram are lettered to correspond with the following list.

G	Ground connection to propeller shaft.
VC	23 plate variable condenser.
P	Primary of vari. coupler.
T	Rotor of vari. coupler.
SW	Switch arm with 8 switch contacts.
BP	6 Binding posts.
S	Socket panel type to hold vacuum tube.
R	Panel type rheostat.
GC	Grid condenser and leak.
TC	Telephone condenser.
VT	Vacuum tube radiotron No. 200.
B	B Battery 22½ volt.
A	A Battery, 6 volt, 60 ampere hour.
Tel.	Pair 2000 ohm telephone receivers.
Ant.	Antennae wire, copper, 6 strands No. 22.
Ins.	10 small porcelain insulators.
F	B battery fuse, consisting of flashlight bulb and miniature socket. May be replaced with switch.

Material Required

¼ lb. No. 22 double cotton covered copper wire.
2 spars for antennae.
25 feet wire No. 16 or 14 for use as battery and ground connections.

Advertising Index will be found on page 114

To buck seas, headwinds, currents, tides—an extra H.P.

—and that is the indispensable extra H. P. needed to give dinghies full carrying capacity under all conditions—to meet every yachting emergency. Full three H. P. by piston displacement rates the *ELTO* as the most powerful outboard motor notwithstanding its light weight.

Ole Evinrude, outboard motor pioneer, has built his perfected motor, the Elto, *as light as right*—light enough for easy portability, yet at no sacrifice of power—no compromise of wearing and bearing surfaces—no loss of dependability or of service life.

Rudder steering makes tiller control positive and practical from any point of the boat. It enables you to "trim ship" regardless of load or water conditions. No dizzy, dangerous pivot turning! Rudder control is an absolute safety factor! It is the recognized method of boat control. Your boat will take a straight course — only needing attention at the turns. No constant, tiresome holding to a shaky steering handle. Beach your dinghy anywhere —the Elto tilts when propeller-protector hits bottom — no danger of breakage — either to motor or dinghy.

The Elto is vibrationless, a perfectly balanced "Twin"—has quiet underwater exhaust—grease tight gear housing—weedless construction — splendidly compact for stowing—a motor of super-satisfying performance and of beautiful appearance.

Ask to see the ELTO—the name of the only motor made under personal direction of Ole Evinrude.

Be ready to order early, for prompt spring delivery. Send today for booklet that shows you how to judge outboard motor values. If you have an outboard motor, tell us what it is.

Some good territory open for dealers, and individual agents.

Elto Outboard Motor Co.
[Dept. F] Manufacturers Home Bldg.
MILWAUKEE WISCONSIN

Big Hot Spark Means "A Quarter Turn Easy Start"

My experience has convinced me that hard, stubborn and uncertain starting has been overcome by a big hot spark, which is produced *only* by battery ignition, regardless of cranking speed. That's why the ELTO solves the starting problem, as it has been solved by the motor car—with a big hot spark. And that's why any one in the family starts the ELTO with a quarter turn. Its Atwater Kent Unisparker permits of no juice wastage. Its waterproof battery gives full season's service. No parts to be returned for remagnetizing. Every hardware store is a service station. This is the only ignition that I am willing to offer as dependable for quick easy starting by anyone, under all conditions.

Cordially,

Ole Evinrude

Elto
Light Twin

The Fast 3 H.P. Twin Cylinder Outboard Motor "As Light as Right"

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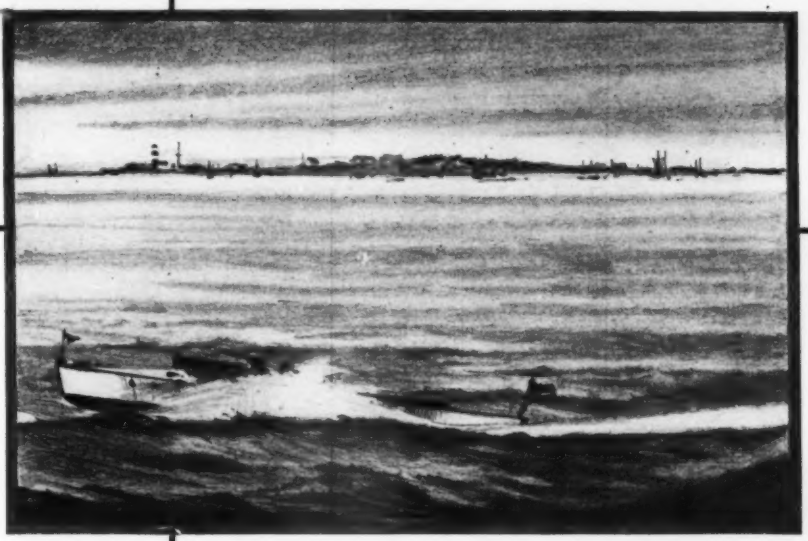


When you're 'way out there—

Far off-shore and alone—that's when you'll appreciate the sure-fire ignition you *know* your motor will have with a good storage battery. Westinghouse Standard Batteries are the finest batteries Westinghouse can build. They embody the most advanced engineering, the highest quality materials, the most skillful workmanship the Westinghouse organization can command. And their oversize capacity—reserve power—offers added assurance of their thorough dependability at all times. Reasonably priced.

Adopted as standard equipment by the Miller Engine Company, The Peerless Marine Engine Company, and the Sterling Engine Company.

WESTINGHOUSE UNION BATTERY CO.
Swissvale, Pa.

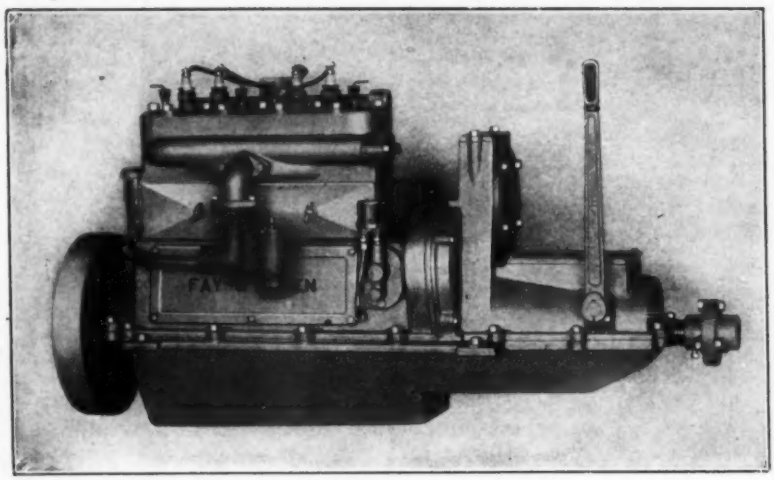
WESTINGHOUSE BATTERIES

MARINE GOBEST AND IT DOES ENGINE

12 H.P.

NEW

DESIGNED AND BUILT FOR MARINE SERVICE



NEW

DESIGNED AND BUILT FOR MARINE SERVICE

LN-40—Fay & Bowen Standard Construction

7 H.P. at 800 R.P.M.—8½ H.P. at 1000 R.P.M.—12 H.P. at 1400 R.P.M.

AND SHE'LL DO IT

Bore 2 13/16"—Stroke 4"—Weight 365 Lbs.

EQUIPMENT

Snow & Petrelli Reverse Gear, Carburetor, Atwater-Kent Battery-Ignition and Switch, Spark and Throttle Controls, Spark Plugs, Wiring and Water Pump

PRICE $350.00 PRICE

F.O.B. Geneva, N. Y.

OTHER MODELS UP TO 85 H.P.—SEND FOR CATALOGUE

RELIABILITY F&B

FAY & BOWEN ENGINE COMPANY

104 LAKE STREET, GENEVA, N. Y., U. S. A.

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PHILADELPHIA; 116 Walnut St., Marine Equipment & Supply Co., Representatives
BOSTON; 84 Atlantic Ave., Gray-Aldrich Co., Representatives

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